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RESEARCH OF THE RECOVERY EFFECT FROM SOYBEAN POLYPEPTIDE SOLID BEVERAGE ON ATHLETES IN ENDURANCE EVENTS

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ABSTRACT

This paper aimed to observe the recovery effect of soybean peptide solid beverage on athletes in endurance events. Twenty-one male provincial middle-distance runners were included in this study and randomly classified into the control group, glucose feeding group and peptide feeding group. Besides, they received high intensity training for four weeks. Athletes in the peptide feeding group were fed with the sports beverage containing 8g soybean polypeptide and 35g glucose. The glucose feeding groups were fed with the beverage containing 35g glucose. The control groups were fed with a placebo close to the soybean polypeptide beverage in outlook and taste. The body composition, RPE grade and the biochemical index in blood of study objects were detected before experiment, two weeks later and after experiment. From the experiment, it was found that the weight and lean body weight of athletes in peptide feeding group were obvious higher than before the experiment ($P<0.05$), and their serum testosterone was higher than that in control group ($P<0.05$). However, the PRE grade was much lower in the peptide feeding group ($P<0.05$), as well as the serum creatine kinase ($P<0.05$). It is found in the experiment that intake of soybean polypeptide can promote the increase of lean mass weight for middle-distance runners and the serum testosterone. Besides, it can also downgrade the RPE after training, which gives the hint that the soybean polypeptide is beneficial to the synthesis of protein and has anti-fatigue effects to some extent. Moreover, the intake of soybean polypeptide is able to cut down the serum creatine kinase for middle-distance runners after exercises, and provides the hint that soybean polypeptide can greatly promote the recovery of injury in skeletal muscle tissues and decrease the creatine kinase exosmosis within cells.

1. Introduction

The synthesis of protein within organism was inhibited during exercises. Meanwhile, it induced the increase in the protein decomposition of skeletal muscle, oxidation of amino acids and gluconeogenesis, which led to an increase in the utilization of protein within the body, an injury to the skeletal muscle and a reduction in the matter of energy metabolism. All of these would finally leave a great damage on the sports performance (Yongsheng *et al*., 2014). In order to sustain and improve the sports capability of athletes, increase the muscle content and strength and rapidly alleviate the sense of fatigue, athletes are supposed to be timely supplied with protein in

vitro after exercises, so as to make a compensation for the protein consumption within their body and avoid the negative balance of protein in the skeletal muscle (Dongmei, 2013). There are some data showing that polypeptide in small molecules is easier to be assimilated than the protein or amino acids, while it enjoys a highest rate of assimilation in intestinal tract and it is able to recover and strengthen the physical strength in a short time. Soybean polypeptide is just one compound of oligopeptide (Man *et al*., 2012).

The compound between a peptide and a peptide bond is involved in different fields, like hormone, nerver, cell growth and reproduction. It works as an important physiological regulator within human body, which can regulate the physiological functions in a comprehensive way, activate and give full play to the physiological activity of human body (Ying *et al*., 2014). Soybean polypeptide refers to the decomposed protein product acquired from the soybean protein under the effect of protease and a special processing later. The constitution of its amino acids is almost completely the same as the soybean protein. Besides, it enjoys some excellent nutrition features, like a sound balance in the necessary amine acids and an abundant content (Li, 2013; Haitao and Xu, 2008). In recent years, it was widely applied in the sports medical field, and enjoys lots of benefits in the following aspects. For example, it promotes the recovery of fatigue and the damaged tissues in skeletal muscles. It also promotes the increase of muscles and the lipid metabolism; especially it plays an important role in anti-oxidation, weight loss and the decrease on blood fat. In order to observe the recovery effect of soybean polypeptide solid beverage on the athletes in endurance events, this paper took the middle-distance runners as the study objects, and carried an observation and study on effects of this application.

2. Materials and methods

2.1. Experiment materials

The main ingredient in soybean polypeptide solid beverage is soybean polypeptide (including pentapeptide, hexapeptide and octopeptide). The sequence of polypeptide is shown as follows by the determination of mass spectrometry.

①Leu Ala Pro Glu Glu

②Met Ser Leu Pro Thr Asn

③Arg Leu Met Leu His Leu Ala Pro

Main molecular weight is distributed between 200 to 600.

Three kinds of beverage employed in the experiment:

A: soybean polypeptide solid beverage mainly containing 8g soybean polypeptide and 35g glucose

B: glucose control beverage mainly containing 35g glucose

C: blank control solution with the outlook and taste similar to the soybean polypeptide beverage

2.2. Objects for experiment

Twenty-one male middle-distance runners at provincial level, whose mean age is 22.24±2.00, average height is 175.33±6.43cm, average weight is 61.90±5.87kg and the average sport grade is 2.00±0.84.

2.3. Experiment design

These 21 athletes were randomly classified into three groups: control group with 7 athletes,

glucose feeding group with 6, and peptide feeding group with 8. All objects took orally one package of beverage A, B, C respectively rightly after the conclusion of every training course (namely one package for each morning and afternoon). This experiment cost four weeks all together, five days each week (Saturday and Sunday excluded) and from 4 to 6 hour per day. The required exercise plan for objects in every group in this high intensity exercise for four weeks was basically same. During experiment, these objects were kept away from any other nutrition and health products, except the normal diet and the intake of these three beverages employed in this experiment--namely A, B and C.

2.4. Detection index

(1) Test in body composition: In-body3.0 body composition tester was applied in detecting the weight and lean mass weight for these objects both before and after the experiment

(2) Test in subjective feelings: all objects should fill in a record table about the exercise situation and subjective feeling. Based on the PRE grade, the subjective feelings in the week 1, 2 and 4 was taken into the statistical analysis.

(3) Blood biochemical test: three tests were carried out before the experiment, two weeks later and in the peace state after the experiment respectively. Blood was taken through the ulnar vein and some were treated with anticoagulant to measure the hemogram RBC (Red Blood Cell), MCV (Mean corpuscular volume), HCT (hematocrit), PLT (Platelets), Hb (hemoglobin), MCH (Mean Corpuscular Hemoglobin), and MCHC (Mean Corpuscular Hemoglobin Concentration). The other parts were used to prepare the serum and detect the LDH (lactate dehydrogenase) and CK (creatine kinase) in the accessing index of injury in the skeletal muscle tissues. Besides, they were also used to detect the BUN (Urea nitrogen) and T (testicle) in the evaluation index of protein synthesis, decomposition and metabolism as well as detect the IgA, IgG and IgM in immunoglobulin.

2.5. Statistical analysis

The experiment result was expressed by Mean ± SD, and the experiment data in all groups were analyzed by software SPSS19.0. Comparisons among groups at the same time were detected by one-way detection of variance, and $p<0.05$ meant that the difference was of statistical significance. The paired test was applied in the same group but at different time and $p<0.05$ meant that the difference was of statistical significance.

3. Results and discussions

3.1. Experiment result

(1) The influence of beverage supply during exercises on the body composition of middle-distance runners is shown in table 1.

Table 1. Changes in body composition of objects from different groups pre- and post-experiment

Groups in experiment		Weight(kg)	Lean mass weight(kg)
Control group(n=7)	Pre- experiment	64.30±9.02	53.78±7.94
	Post- experiment	64.85±8.77	54.45±8.27
Glucose feeding group(n=6)	Pre- experiment	61.21±5.76	50.46±4.39
	Post- experiment	61.44±5.57	50.63±4.38
Peptide feeding group(n=8)	Pre- experiment	62.43±4.96	51.52±3.98
	Post- experiment	63.27±5.02*	52.23±4.28*

Note: * therein means $p<0.05$, when compared with the peptide feeding group before experiment

It is shown in table 1 that there are no obvious changes in the weight and lean mass weight in both control group and glucose feeding group. However, the weight and lean mass weight in the peptide feeding group after

experiment are obviously higher than those before experiment (P <0.05).

(2) The influence of beverage supply during exercises on the RPE of middle-distance runners is shown in the table2.

Table 2. Changes of PRE of objects in different groups

	n	Week 1	Week 4
Control group	7	14.59±1.59	13.85±1.38
Glucose feeding group	6	14.11±2.29	11.94±2.59
Peptide feeding group	8	13.12±1.96	10.39±0.84 ##***

Note: ## therein means P<0.01 when compared with the peptide feeding group in week 1. *** Therein means p<0.001 when compared with the control group in week 4.

It is shown in table 2 that the RPE grade in peptide feeding group has an obvious decrease from 13.12±1.96 in week 1 to 13.12±1.96 in week 4(P<0.01). When compared with the control group, the RPE also downgrades a lot with a significant difference (P<0.001). However, no obvious decrease is found in other two groups.

(3) The influence of beverage supply during exercises on the protein synthesis, decomposition and metabolism evaluation index for middle-distance runners is shown in table 3.

Table 3. Changes of serum T and BUN for athletes in different groups' pre-, mid- and post-experiment

	Control group			Glucose feeding group			Peptide feeding group		
	Pre-	Two weeks later	Four weeks later	Pre-	Two weeks later	Four weeks later	Pre-	Two weeks later	Four weeks later
T (ng/dl)	562.75 ± 113.30	552.05 ± 163.90	474.50 ± 137.22	535.34 ± 119.27	558.23 ± 83.65	546.10 ± 148.34	532.87 ± 151.33	571.84 ± 103.61	662.01 ± 164.72 *
BUN (mmol/L)	8.21± 1.42	7.38± 1.22	7.12± 1.14	7.38± 1.40	7.06± 2.50	6.72± 2.33	7.90± 1.64	6.75± 1.20	6.74± 2.49

Note: *therein means p<0.05, when compared with the control group four weeks later.

It is well shown in table 3 that the serum T for athletes in peptide feeding group four weeks later is about 40% higher than the control group, while the serum BUN enjoys no significant differences in all groups(P >0.05). (4) The influence of beverage supply during exercises on the biochemical index in oxygen cycling system is shown in table 4.

Table 4. Changes of hemogram index for athletes in different groups pre-, mid- and post-experiment

	Control group			Glucose feeding group			Peptide feeding group		
	Pre-	Two weeks later	Four weeks later	Pre-	Two weeks later	Four weeks later	Pre-	Two weeks later	Four weeks later
RBC (×1012L)	5.16± 0.50	5.04± 0.30	5.04± 0.30	5.04± 0.38	5.13± 0.39	5.13± 0.39	5.15± 0.23	5.24± 0.27	5.24± 0.27
MCV (fL)	85.67± 3.40	86.52 ±7.96	86.52 ±7.96	84.72 ±3.93	84.38± 3.86	84.38± 3.86	85.36± 3.23	85.41± 3.32	87.05± 3.08
HCT (%)	42.58 ±2.44	43.60 ±3.90	43.60 ±3.90	44.07 ±3.21	43.26 ±3.22	43.26 ±3.22	43.96 ±2.67	43.73 ±2.22	43.73 ±2.22
PLT (×109L)	164.28 ±31.35	165.42 ±37.97	165.42 ±37.97	149.00 ±34.06	159.40 ±26.78	159.40 ±26.78	143.37 ±24.89	159.37 ±40.82	159.37 ±40.82
Hb (g/ dl)	16.01 ±1.05	15.14 ±1.25	14.52 ±0.43	15.90 ±0.75	14.94 ±1.20	14.94 ±1.20	16.10 ±1.03	14.93 ±0.62	14.93 ±0.62
MCH (pg)	31.18 ±1.47	28.90 ±1.30	28.32 ±1.29	31.68 ±1.59	29.12 ±0.83	29.12 ±0.83	31.31 ±1.17	28.51 ±0.86	28.51 ±0.86
MCHC (g/ dl)	36.34 ±0.73	33.54 ±2.19	32.71 ±0.61	37.38 ±0.90	34.56 ±1.34	33.18 ±0.47	36.67 ±0.68	34.17 ±1.19	32.77 ±0.77

It is shown in table 4 that the MCHC for middle-distance runners in every group is obviously declining with the prolonging of exercise. MCH for objects in control group and glucose feeding group is obviously much lower than that before the experiment two and four weeks later ($p<0.01$). Index for peptide feed group is also declining, while it is of no significant difference. Hemachrome for each group is all declining, among which index in the control group is obviously much lower after this experiment ($P<0.05$), and hemoglobin in peptide feeding group is both found obviously much lower after this experiment two weeks later and much lower four weeks later ($P<0.05$). However, there are no significant differences in other hemogram indexes (RBC, HCT, PLT, and MCV) for athletes in each group.

(5) The influence of beverage supply during exercises on the skeletal muscle tissue injury evaluation index for middle-distance runners is shown in table 5.

Table 5. Changes of serum LDH and CK for athletes in each group pre-, mid- and post-experiment (Mean±SD).

	Control group(n=7)			Glucose feeding group(n=6)			Peptide feeding group(n=8)		
	Pre-	Two weeks later	Four weeks later	Pre-	Two weeks later	Four weeks later	Pre-	Two weeks later	Four weeks later
LDH (IU/L)	214.57 ±31.22	238.42± 34.99	223.85 ±32.74	205.50 ±30.05	219.60 ±30.03	211.60 ±36.19	233.87 ±37.92	229.25 ±36.29	283.14 ±174.51
CK (IU/L)	484.00 ±294.22	270.2 ±80.77	331.85 ±138.74	380.33 ±169.89	286.00 ±79.32	377.00 ±157.92	394.00 ±224.08	255.87 ±136.72	190.00 ±54.44* #&

Note: * therein refers to P <0.05 when compared with the control group four weeks later; # therein refers to P <0.05 when compared with the glucose feeding group four weeks later; & therein refers to P <0.05 when compared with the peptide feeding group before this experiment

It is shown in table 5 that the serum LDT in each group has no significant difference at different time. CK for athletes in control group and glucose feeding group has no significant difference two and four weeks later. However, CK for athletes in the peptide feeding group is declining with the prolonging of exercises, and it is much lower than that in control and glucose feeding group four weeks later (P<0.05).

Table 6. Changes of immunoglobulin index for athletes in each group pre-, mid- and post-experiment (Mean±SD)

	Control group(n=7)			Glucose feeding group(n=6)			Peptide feeding group(n=8)		
	Pre-	Two weeks later	Four weeks later	Pre-	Two weeks later	Four weeks later	Pre-	Two weeks later	Four weeks later
IgG (g/L)	10.68 ±2.74	9.86 ±2.02	10.37 ±1.83	11.60 ±1.81	10.43 ±1.64	10.48 ±1.48	10.43 ±3.30	10.43 ±2.76	10.42 ±3.72
IgA (g/L)	1.88± 0.60	1.85± 0.61	1.85± 0.49	2.02± 1.01	2.16± 0.87	2.04± 1.18	2.46± 0.67	2.04± 0.47	2.44± 0.77
IgM (g/L)	1.14± 0.20	1.12± 0.14	1.06± 0.31	1.11± 0.42	0.92± 0.33	0.96± 0.28	1.09± 0.27	1.07± 0.28	1.15± 0.31

It is shown in table 6 that immunoglobulin for athletes in each group have no significant difference on average.

3.2. Discussions

Soybean polypeptide stems from the enzymolysis product of soybean protein. It is the protein hydrolysis product acquired from the soybean protein under effect of protease and a special processing later. It is a sort of oligopeptide compound with a relative molecule weight distribution under 1000 mainly. It mainly appears within the scope of molecule weight between 300 and 700, which acts as an active peptide (Na *et al.*, 2010). In 1940s, there were some western scholars working on an initial study of the soybean polypeptide when denaturing protein by enzyme. But until late 1960s, with the development of biological technology and life

science, the physiological functions of active peptide were gradually discovered and took seriously. Until then, the study on the active peptide is promoted and meanwhile the study and development of soybean polypeptide is further boosted (Yuhua *et al*., 2010). In 1970s, the US processed and produced the edible soybean peptide products first of all, and subsequently Japan and China began to carry on study in this aspect in 1970s and 1980s one after another.

There are some literatures revealing that soybean polypeptide not only enjoys the same necessary amino acids as soybean protein, but is quicker to be assimilated, quicker in energy supply and helps to recover the fatigue of muscle for athletes, when compared with the soybean protein (Shaozai and Shaobing, 2011). Thus, this paper made an observation about the influence of soybean polypeptide beverage on certain biochemical indexes for athletes in endurance events, with a hope to provide more theoretical basis for the application of soybean polypeptide in exercises nutrition field. Results in this study show that the weight and lean mass weight in peptide feeding group is much higher four weeks later than that before this experiment ($P<0.05$). However, the RPE grade is much lower, which is consistent with results in other related literature. Meanwhile, it is shown in table 3 that the serum T in peptide feeding group tends to be rising after this experiment, which presents that the supply of soybean peptide can effectively inhibit or shorten the side effects of negative nitrogen balance in vivo from exercises. Moreover, it can sustain or promote the synthesis of normal protein in vitro, alleviate or slow down the physiological changes induced by exercises and further reach the effect of anti-fatigue (Min, 2010). Besides, result in this study shows that the intake of soybean polypeptide has no significant effects on oxygen quantity index of erythrocyte for middle-distance runners after four weeks of high intensity exercises, as well as on the immunoglobulin (table 6), which are consistent with the results in related researches (Yaoshan *et al*., 2013). However, there are some literatures revealing that the active peptide is able to promote the recovery of erythrocyte and enhance its oxygen carrying capacity. Dragan I et al also found that soybean protein hydrolysate could improve the hemachrome for athletes in endurance events (Shicheng *et al*., 2010). Thus, it is still open to further discussion. It is shown in table 5 that the serum CK is not rising but declining for athletes in peptide feeding group after 4 weeks of high intensity exercises. This gives the hint that soybean polypeptide beverage plays a certain role in protecting the cell-membrane, reducing the exosmosis of CK within muscle cells and promoting the recovery of skeletal injury tissue after exercises. Nikawa T et al also made a study about this. Rats in two groups were taken food with 20% casein and food with 20% protein hydrolysate respectively. Then these rats undergone a strenuous treadmill running and they finally found that rats taking food with casein had a severe decomposition of MHC in gastrocnemius, an increase in Calpain activity and a rising serum CK. However, the decomposition of MHC in gastrocnemius and Calpain activity were obviously inhibited for rats taking food with soybean protein hydrolysate. Thus, Nikawa T et al supposed that soybean protein hydrolysate might prevent the decomposition of skeletal muscle protein induced by exercises by inhibiting the Calpain-mediated protein hydrolysate, which provided a theory basis for experiment result in this paper (Tong *et al*., 2012).

4. Conclusions

The conclusion for this experiment is shown as follows:

(1) The intake of soybean polypeptide solid beverage can promote the increase of lean mass weight for middle-distance runners,and the increase of serum T, which means that the soybean polypeptide can effectively promote the synthesis of protein.

(2) The supply of soybean polypeptide solid beverage can downgrade the RPE for middle-

distance runners after exercises, which hints that soybean polypeptide has certain anti-fatigue effects.

(3) The intake of soybean polypeptide solid beverage can decline the serum CK for middle-distance runners after exercises, which hints that soybean polypeptide is able to promote the recovery of injured tissues in skeletal muscle and minimize the exosmosis of CK within cells.

(4) The supply of soybean polypeptide solid beverage produces no obvious effects on the exercise-induced low hemachrome for middle-distance runners after a high intensity exercise, and it is open for discussion about the related research.

(5) The intake of soybean polypeptide solid beverage produces no effect on the immunoglobulin for middle-distance runners.

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TRANSLATION CHARACTERISTICS OF FOOD SCIENCE PROFESSIONAL ENGLISH

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ABSTRACT
Professional English on food belongs to English for specific purpose, including technical terms involved in process from production, processing, sale and consumption of food. It not only has the ordinary characteristics of English but also has some particularities. Combined with practice, this paper analyzed the characteristics of its vocabulary, grammar and discloses, and discussed its translation strategy.

1. Introduction

Food industry has become the sunrise industry recognized by the whole world. With the deepen of reform and opening-up, food industry also becomes the first largest industry in China. Moreover, food safety draws more and more attention. China, as the member of WTO, deepens its relationship with countries in the world and increases its cooperation on food technology with others. English, as one of the mainstream international communication language, highlight its function. Professional English on food is distinctive in wording and translation. This paper expands analysis in the perspective of vocabulary, grammar and literary form, and initially explores its translation strategy.

2. Materials and methods

2.1. High frequency of affix

Many words in professional English on food is composed of root and a number of affix. Widely use of affix is also one of the characteristics of professional English on food. Based on the different position of affix in word, affix can be divided into prefix, infix and suffix. Infix has no semantics, and generally locates between two roots or root and suffix for connection; affix is before root and endows roots with new meaning; suffix is after root and mainly used for expressing word class, and sometimes can endow the root with weaken supplement meaning (Erdong *et al*., 2013; Ting, 2013). Usage of affix in food science professional English can be concluded into the following aspects according to its nature (table 1).

Table 1. Summary of affix in food science professional English based on nature

Affix category	Explanation of affix	Example
Preposition affix and adverb affix	Usually act as the affix of verb to show time, direction and means of action.	a- (no, non), aseptic; anti-(oppose to, reverse), antibody; hydr(o)-(water,liquid), hydrolysis; extra- (exceed), extra-cellular;
Modified affix	Usually express as amount, nature and state of matters	bi- (two),bicarbonate; tri- (three),triester; hemi-(half),hemicellulose; iso-(equal),isotope；
Verb affix	Mainly connect with noun in the form of - suffix to show nature, state and particularity.	aldehyde; formaldehyde; amide;benzamide; ase;peptidase; sulphate.

2.2. High professional levels

Developing till now, professional English on food has formed a set of precise term that is particular. These terms usually has concentrated semantics, therefore, can precisely express scientific meaning, which is very important for understanding semantics. On the other hand, professional terms are usually long and hard to pronounce (Xiaoying *et al*., 2013). For example, lactose, glycine, thermophilus and streptodornase and glucoamylase, and so on.

2.3. Wide use of abbreviation

In professional English on food, some terms or names of groups and organizations recur in article, but complete writing is not convenient. At that time, use of abbreviation cans convenient communication and simply the writing. For example, RDA (recommended dailynutrient allowance); GMP (good manufacturing practice); HACCP (hazard analysis and critical control point); USDA (US Department of Agriculture); IFBC (International Food Biotechnology Council).

2.4. Broad fields involved

Food involves many industries, hence, professional English on food also involves knowledge and vocabulary of subjects of physics, chemistry, biology, medicine and engineering, and some words varies in meaning in different fields (Long and Hui, 2011). For example, physical word: rheology, velocity; chemical word: picking, tartaric; biological word: epinephrine, teratogenic; medical word: mycotoxin, allergen.

2.5. Many exotic vocabularies

English absorbs a large amount of exotic vocabularies in its formation process, which finally become a part of English vocabularies. Affected by the advanced technology of ancient Rome and Greek, many vocabularies of professional English on food originate from Latin and greek language. For example, words originate from greek language: biotin, organism, hydroxyl, hydrolysis; words

originate from Latin: altitude, formula, percent, vacuum.

3. Results and discussions

3.1. Frequent use of present tense of verb

Food science professional English tends to show present tense of verb mostly, especially simple present tense to state "timeless" process or natural phenomenon, process and routine with no time limitation. Simple present tense applied in food science professional English aims to give people premise understanding and vivid the article. For example, case 1. Since most bacteria, with the exception of acetic acid and lactic acids bacteria, prefer more neutral pH values the susceptibility of wine musts to infection is greatly reduced.

3.2. Uses of passive voices

Professional English on food often use passive voices. That is because the narrative object in food science professional English is usually objective object, phenomenon and process, and the narrative subject is usually people. At that time, use of passive tense can make the statement more objective and draw reader's attention on the narrative object. In addition, passive voices are characterized by clear expression and simple wording. For example, case 2. If in addition the amino acids are permitted only in amounts that produce a measurable improvement in protein quality, then there is no danger that excess amino acids will be consumed.

3.3. Mass use of non-finite forms of verbs

Food science professional English tends to widely use non-finite verbs, that is, participle, infinitive and gerund, especially participle. This is also the internal requirement for concise wording of scientific paper. For example, case 3 .This method which is being rapidly developed involves the exposure of food to a cooling medium at a very low temperature.

3.4. Mass use of chart

Much information in food Science Professional English are expressed in the form of chart and formula. Chart is characterized by conciseness, to the point, vividity and concreteness, thus the complex word expression is left out (Xiaoming *et al*., 2012), as shown in figure 1.

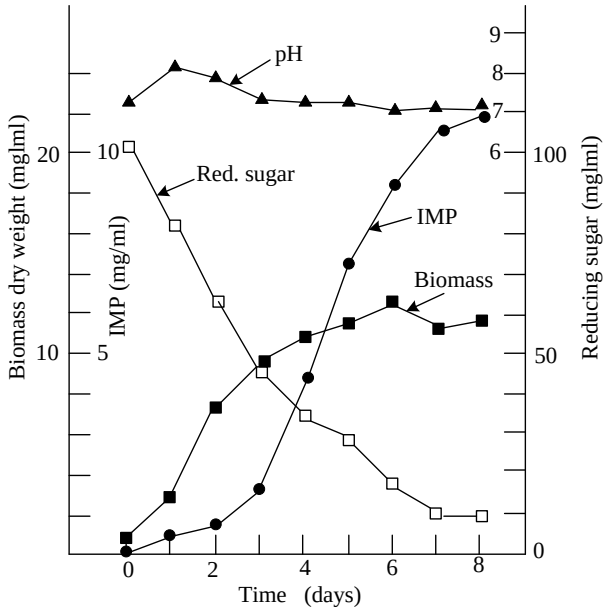

Figure 1. Figure from food science professional English literature

3.5. Translation strategy of food Science Professional English

"Distinctive characteristics of scientific English are coherence in logic, clarity and fluency of expression, avoiding incomprehensible wording. Author avoids exposure of individual emotion and subjective randomness in argument." (Hong *et al*., 2013). Food Science Professional English, as one of the scientific English, should pursue for gentle and preciseness in translation, as well as vivid wording on this basis. Food Science Professional English is usually literal translation, and add and subtract words when free translation is needed. Generally, it should depend on the concrete situation and has no fixed pattern (Limei and Weihua, 2011; Junli *et al*., 2014). Table 2 shows some translation strategies.

Table 2. Translation strategies

Translation strategy	Instructions	Translation case
Premise translation of meaning	Food science professional English, as English in a professional field, has its special meaning in professional terms, differing from ordinary vocabulary. Therefore, only master the relative specialized knowledge or look up in specialized dictionary can we accurately translate the meaning. When translating, norm and preciseness are required. If some word has been translated, then it should remain coherency and not be changed randomly.	Hydrolysate:水解产物;volatile:挥发性的; coagulus: 凝结物; amylase: 淀粉酶,amino acid:氨基酸;tertiary structure: 三级结构
Transformation of translation	Since English and Chinese differs in morphology, syntax and expression means, translation of word to word, sometimes, is not advisable. We should choose proper words in the perspective of basic meaning according to context and logic corresponding relationship. In addition, because of the difference of vocabulary, structure and rhetoric, we should pay attention to the transformation of part of speech and sentence constituents to conform to	Case 5. With the use of the increased temperature and pressure,the tertiary structure was immediately decomposed. Translation :利用高温高压,三级结构很快被分解。(English noun-Chinese verb). Case 6. This product differs from amylase by volatile nature. Translation:这个产品和淀粉酶的区别在于挥发性。 (English verb- Chinese noun) Case 7. Much has been done on the high temperature processing of food products. Translation:关于高温对食品的处理已经研究得很多了。(transformation of sentence constituents, English subject transforms to Chinese complement)

	the stylistic features and expression habit of Chinese.	
Proper amplification and omission	Increase and decrease of words or sentence is needed in translation of food science professional English article so as to adapt to the expression means of Chinese. Here, amplification or omission is to make the translation smoother and appropriate on the basis of true to the original. In the process of translation, translation is not equal to the original in form but is to coordinate in content and form and equal to overall.	Case 8.Using aseptic,meat could be preserved for long time. Translation:如果使用防腐剂,肉可以长时间保存。(amplification based on structure) Case 9.The substances get into the soil,into plants and into human bodies. Translation:这些物质进入土壤、植物和人体。(add words of plural concept) Case 10.Most mRNAs in bacteria are unstable with half of 2-4 minutes at 50℃. Translation :在细菌细胞内,大多数 mRNAs 是不稳定的,它们的半衰期在 50 度下是 2-4 分钟。 Case 11.Heated toa temperature of 300℃ and then the bacteria would be sterilized. Translation :加热到 300 度,细菌就会被杀死。(omission of unnecessary words)
Translation of passive voices	Mass use of passive voices is one of the characteristics of food science professional English; however, in Chinese, use of passive sentences is not broad as Chinese. Therefore, adjustment is needed in Chinese translation.	Case12.Proteins, carbohydrates,fats are often groped together and called organic nutrients. Translation: 人们通常把蛋白质、糖类和脂肪归为一类,称其为有机成分。 Case 13. Attempts were made to make fresh meat free from bacteria. 译文:曾试图使新鲜肉免受细菌侵入。 Case 14. People with allergic disease are particularly hard hit by some food. Translation:患过敏疾病的人,特别容易受到某些食品的危害。
Translation of long sentence and complex sentence	Translation means of long sentence includes division, linear translation, reverse translation and variation translation. When translating long sentence,	Case 15.This is particularly important fora food engineer since the commercial advantages of an optional controlled process include it can provide better quality and lower costs compared with an uncontrolled process.

	first we should read through the whole sentence and clear syntactic structure. Then analyze the grammatical item of sentence and clear main clause and sub-clause. We can first find predicate and then subject. If the subject is obvious, then we can confirm predicate according to the subject. If it is compound sentence, the number of subjects is the same as the number of predicate. Then, confirm relationship of object, attribute, adverbial and complement with the main components. Hence, the primary and secondary structure of the sentence is clear. Finally, the translation can be given out according to Chinese habit.	Analysis: subject is in the sentence-initial position, and subordinate clause is the sentence guided by since. The whole sentence can be translated into: 这点对于食品工程师来说非常重要,因为商品化生产中,优化控制的加工过程与一个非控制的加工过程而言,具有产品质量高,生产费用低的优点。

4. Conclusions

Study of food science professional English is a crucial step for cultivating food science and technology staff that are able to use English science and technology literature and make international exchange. With the strengthening of economical development and national power, our country connects closer to the countries in the world and the food science and technology cooperation also becomes more and more. English as the mainstream exchange language highlights its functions. In the meantime, application of professional English closely related to science and technology exchange is expanded to a large scale. Therefore, understanding and mastering the language characteristics and translation skills of food science professional English is beneficial for us to learn the advanced food science and technology abroad, as well as publicize the advanced technology in our country, thus to better protect our benefits.

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ANALYSIS OF ECONOMIC INFLUENCE FACTORS OF VEGETABLE MARKET PRICE SHORT-TERM FLUCTUATION BASED ON VAR MODEL

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ABSTRACT

Vegetable price is not only the main motivation for unchoking vegetable circulation channel, but also the powerful lever for regulating the benefits of producer and consumer and processing the relationship among country, collective and individual. Unreasonable price of vegetable can affect the normal consumption and life of resident to a large extent as well as the income of farmer. Taking short-term fluctuation of vegetable price in our country as entry point, this paper analyzed the economic influence factors. Factor analysis method and vector auto-regression (VAR) model method was applied to make an empirical analysis on the influence factor of vegetable price fluctuation and proposed the suggestions for stabling the vegetable price fluctuation in our country accordingly. It is concluded that, production cost, issuance of paper money, hot money, and climate are all the main reasons for the short-term fluctuation of vegetable market price.

1. Introduction

China is the vegetable production and sales great power around the world, accounting for 60% of the world vegetable production. In China, vegetable is the indispensable food on the table of Chinese and also the support of agricultural development. With the rapid development of China in recent years, export volume gradually increases. From 2000 to 2011, the total output of vegetable in China increases from 424 million to 677 million ton, with an amplification of 59.7%. Rapid development of vegetable industry has huge influence on the optimization and adjustment of agricultural plantation structure and agricultural trade increase income.

Vegetable must be produced through plantation. Its production is greatly affected by natural factors; moreover, it is easy to decay and damage in the transportation process. Vegetable price refers to the value of vegetable which has vividness reflecting on currency. Fluctuation of vegetable price refers to the fluctuation of average price of vegetable market affected by total supply and demand of vegetable. The fluctuation can be divided into daily fluctuation, weekly fluctuation, seasonal fluctuation and yearly fluctuation. In recent years, the price of Chinese vegetable market is in a situation of big rise and fall, which arises the discussion of multiple scholars. There is no lack of persuasive excellent argument. In the article of Vegetable Price Fluctuation and Inflation in China, Tu Taotao et al. proposed to decompose vegetable price fluctuation sources into trend variation (Taotao and Chongguang, 2014); seasonal variation, cyclical variation and irregular variation by Census X12 seasonal adjustment and H-P filter method. The article also suggested slowing down CPI increase by decreasing inflation expectation, promoting interregional flow, and controlling logistics cost and perfecting disaster response policy. In the article of K-line Analysis Method and Its

Application in Early Warning System of Vegetable's Prices, Zhao Chao et al. proposed to induce K-line analysis method to develop analysis of market situation and price pre-warning system of vegetable price (Chao, Zhong and Dan 2013). It also summarized research range of vegetable price fluctuation analysis pre-warning system with k-line analysis and put forward the technical route of developing vegetable price fluctuation analysis pre-warning system. In the article of Development Mode of Vegetables Industry for Shandong Province Based on 4Ps Theory, Liu Duangsheng et al (Guangsheng *et al*., 2014). found that the vegetable industry development in Shandong was narrow. It designed the vegetable industry development pattern in that area referring to marketing 4Ps theory. This pattern made a systematic discussion on improving the vegetable industry competition and promoting the healthy development of vegetable industry in that province. This study tried to analyze the reasons for analyzing the short-term fluctuation of vegetable price, thereby providing reference for regulation decision for stabling vegetable price.

2. Matherial and methods

Frisch, founder of econometrics, proposed a kind of method that determines marginal utility by statistical material in New Methods of Measuring Marginal Utility published in 1932. According to marginal utility theory, marginal utility of last dime from certain income used for purchasing every product should be equal. This marginal utility is termed as marginal utility of income, that is, if income increases, then marginal utility will decrease. If we measure the relationship of marginal utility of two people with different income, then the elasticity of margin can be obtained. Market analysis and price analysis of agricultural supple and demand, as an important part of modern agricultural economic theory system, developed based on the market supply and demand theory jointly created by Marshall, Fisher and Hicks. Western economics analyzed price fluctuation of agricultural product based on the change of supply and demand, which makes up the important content of agricultural economic analysis (Zhenya, Jianping and Qing et al, 2012). This paper took market supply and demand theory as the theoretical basis for studying the influence factors for short-term fluctuation of vegetable price, thus to provide basis for the empirical analysis in the next step.

2.1. Influence factor of short-term fluctuation of vegetable price

Through the discussion of multiple experts and scholars in different perspectives, the influence factors for the short-term fluctuation of vegetable market price can be summarized into the following aspects (Mitchell, 2008).

(1) Imbalance of demand and supply: the changes of vegetable price are the realistic reflection of the relationship of demand and supply.

(2) Plantation cost: according to cost-push theory, the rise of agricultural input element will push the rise of vegetable price.

(3) Circulation cost: increase of circulation cost of agricultural product is the important inducement for supporting the rise of agricultural price.

(4) Natural disasters: disastrous weather is the important inducement for inducing fierce fluctuation of vegetable market price.

(5) Hot money speculation: hot money speculation is the important reason for the universal marked rise of agricultural product price in recent years.

Money supply: inflation always performs as a kind of currency phenomenon.

2.2. Index and data

In order to comprehensively reflect the changes of vegetable price, this paper selected related indexes as much as possible as analysis object. Through measuring and screening in aspects of supply, demand and other factors, the following 11 indexes are finally confirmed as the calculation object of factor analysis (Hao, 2012): fresh vegetable consumer price index

(CPI), gross domestic product (GDP) (accumulation), per capita disposable income (PI) (accumulation) year-on-year growth, fuel and power purchasing price index(FPPI), year-on-year growth of export amount of editable vegetable (CVEV), agricultural production data price index (APPI), agricultural hand tool price index (AHTPI), semi-mechanized farm tools price index (SMFPI), mechanized farm tools price index (MFPI), chemical fertilizer price index (CFPI) and other agricultural production data price index (OAPPI). All data are transformed into quarterly or quarterly year-on year index (Na and Jianmin, 2013). Secondly, X12 seasonal adjustment was applied to make seasonal processing on it (Bingchuan, 2010).

Table 1. Seasonal processing result for influence factors of Chinese vegetable price short-term fluctuation

	F1	F2	F3
Fresh vegetable consumer price index (CPI)	-0.1021	0.5503	-0.5984
Gross domestic product GDP (accumulation)	-0.0691	0.1057	0.9892
Per capita disposable income (accumulation) year-on-year growth (PI)	-0.3087	-0.4258	0.5186
fuel and power purchasing price index (FPPI)	0.4867	0.6758	0.3425
Year-on-year growth of ceded value of editable vegetable (CVEV)	-0.2756	0.8475	0.0102
Agricultural production data price index (APPI)	0.9756	0.1482	0.1076
Agricultural hand tool price index(AHTPI)	0.9653	-0.0748	0.5231
Semi-mechanized farm tools price index(SMFPI)	0.9864	-0.1160	-0.0745
Mechanized farm tools price index (SMFPI)	0.9856	0.0642	-0.0514
Chemical fertilizer price index (MFPI)	0.9831	0.0986	-0.0579
Other agricultural production data price index (OAPPI)	0.6539	0.6115	-0.1848

According to the result in table 1, indexes with high load and indexes that are closely related to price fluctuation are selected for further study on the concrete influence factors on price, such as CPI, APPI, FPPI, GDP, CVEV and agricultural product wholesale price index.

2.3. VAR model construction

VAR model is usually used for predicting interconnected time sequence and analyzing the impact of stochastic disturbance on variation system, thereby explaining the influence of various economic impacts on economic variation formation. The model was induced into economic research by C.A. Sims in 1980. Mathematical expression of VAR (p) model is:

$$y_t = \phi_1 y_{t-1} + \cdots + \phi_p y_{t-p} + Hx_t + \varepsilon_t \quad t = 1,2,\cdots,T \qquad (1)$$

In formula (1), y_t is vector of endogenous variables column in k dimension, x_t is vector of exogenous variable column in d dimension, p is lagged order, T is number of sample. k × k dimension matrix $\phi,\cdots,\ \phi_p$ and k × k dimension matrix H is the coefficient matrix to be estimated. ε_t is vector of disturbance column in k dimension. They can be in contemporaneous correlation but not related to their own lagged value and the variables in the right of equation. Suppose Σ, a k × k positive definite matrix, is covariance matrix of ε_t. Formula (1) can be expanded as:

$$\begin{bmatrix} y_{1t} \\ y_{2t} \\ \vdots \\ y_{kt} \end{bmatrix} = \phi \begin{bmatrix} y_{1t-1} \\ y_{2t-1} \\ \vdots \\ y_{kt-1} \end{bmatrix} + \cdots + \phi_p \begin{bmatrix} y_{1t-p} \\ y_{2t-p} \\ \vdots \\ y_{kt-p} \end{bmatrix} + H \begin{bmatrix} x_{1t} \\ x_{2t} \\ \vdots \\ x_{dt} \end{bmatrix} + \begin{bmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \\ \vdots \\ \varepsilon_{kt} \end{bmatrix}, \quad t = 1,2,\cdots,\ T \qquad (2)$$

That is, VAR (p) model for k time sequence variables is composed of k equation. Formula (2) can also be simply transformed and expressed as:

$$\tilde{y}_t = \tilde{\phi}_1 \tilde{y}_{t-1} + \cdots + \tilde{\phi}_p \tilde{y}_{t-p} + \tilde{\varepsilon}_t \quad (3)$$

In formula (3), $\tilde{y}_t$ is the residual of y_t related to exogenous variable x_t regression. Formula (3) can be abbreviated to:

$$\tilde{\phi}(L)\tilde{y}_t = \tilde{\varepsilon}_t \quad (4)$$

In formula (4), $\tilde{\phi}(L) = I_k - \tilde{\phi}_1 L - \tilde{\phi}_2 L^2 - \cdots - \tilde{\phi}_p L^p$ is k × k parameter matrix for lagged operator L. Generally, formula (4) is termed as unrestricted VAR. Impact vector $\tilde{\varepsilon}_t$ is white-noise vector. $\tilde{\varepsilon}_t$ is termed as impact vector in simplified vector since it has structural meaning.

For convenient research, the VAR models used in the research are all unrestricted VAR model with no exogenous variable. ϕ is still used to express coefficient matrix. The formula is expressed as:

$$y_t = \phi_1 y_{t-1} + \cdots + \phi_p y_{t-p} + \varepsilon_t \text{ or } \phi(L) y_t = \varepsilon_t \quad (5)$$

If the root of det $[\phi(L)]$ is outside unit element, then formula (5) meet stationary conditions and can be expressed as vector moving average with infinite order (short for VMA(∞)) form.

$$y_t = A(L)\varepsilon_t \quad (6)$$

In formula (6), $A(L) = \phi(L)^{-1}$, $A(L) = A_0 + A_1 L + A_2 L^2 + \cdots, A_0 = I_k$

VAR model can be estimated through least square method. If there is no restriction condition on Σ matrix, then contemporaneous correlation do not exist since there is only lagged value of endogenous variable appearing in the right of equation. Ordinary least square method (OLS) can be used for obtaining consistent and effective estimator of VAR simplified mode. Even though disturbance vector ε_t has contemporaneous correlation, OLS is still effective, since all equation has same regressor. It is equal to general least square method (GLS). In addition, since any sequence correlation can be eliminated by increasing more lag of y_t, the assumption that disturbance item sequence is uncorrelated is not required high.

3. Results and discussions

Thus paper made quantitative empirical analysis in the influence factors on the vegetable price of China. The most representative index is selected for further studying the influence factors of vegetable price fluctuation.

CPI, APPI, FPPI, GDP, CVEV and vegetable wholesale price index are used to establish VAR model for studying the vegetable price fluctuation in China, since VAR model is suitable for studying correlated index. Eviews6.0 software is still used for data processing and measurement empirical research. In order to eliminate the possible existing heteroscedasticity in time sequence and avoid the fierce fluctuation of price, all data are performed natural logarithm processing. According to AIC and SC criterion, the optimal lag period is selected as 2.

Co-integration test is applied to test whether various variables exist long-term balance. Judged according to SC and HQ criterion, VAR mode of vegetable wholesale price selects 1 order lag and then performed co-integration regression by Trace test and Max-Eig. The result is shown in table 2. The results show that, variables exist co-integration relationship when they have 5% of significance level, that is, there is at least one co-integration vector.

Table 2. Co-integration test result between VAR variables

Sequence tendency	Non-trend item	Non-trend item	Linear tendency	Linear tendency	Quadratic trend
Co-integration equation type	Non-intercept item	Intercept contained item	Intercept contained item	Intercept contained item	Intercept contained item
	Non-trend item	Non-trend item	Non-trend item	Linear tendency	Linear tendency
Trace	4	5	6	6	6
Max-Eig	3	5	6	6	6

We use AR characteristic polynomial root test to inspect the stability of VAR model system. The result shows that, reciprocal of all roots are less than 1, that is, locate within the unit circle, as shown in figure 1, which indicates that VAR model system is stable.

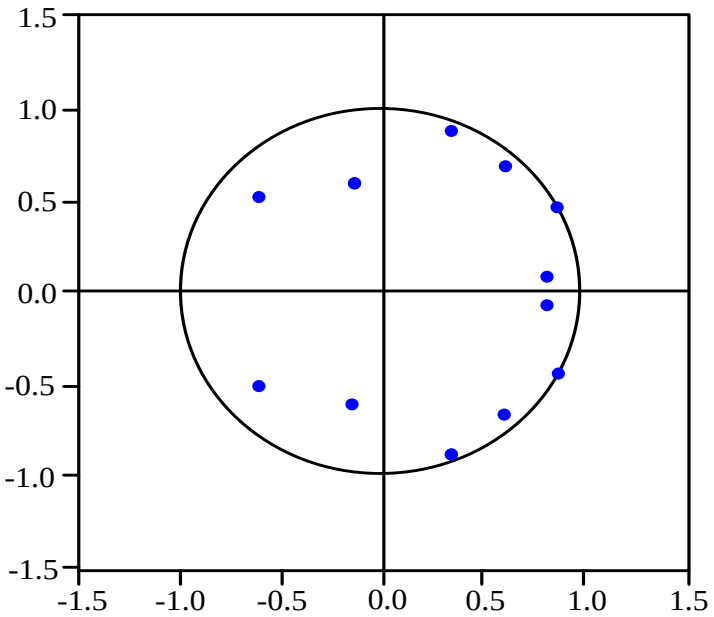

Figure 1. AR characteristic polynomial root test

First, price fluctuation is a necessary economic phenomenon, with inherent regularity and periodicity. Price regulates the relationship between market supply and demand, which can play effect after certain time and has certain hysteretic nature or expected effect. Secondary, inflation or currency factor can greatly impact the vegetable price fluctuation. Thirdly, the influence of cost on vegetable price gradually increases.

4. Conclusions

This paper first analyzed the influence factors of vegetable price fluctuation of China according to the related theory of western economics and agricultural economics. Then factor analysis model and VAR model were used to make empirical analysis on the influence factors for vegetable price fluctuation. The research demonstrated that, in the perspective of theory, the influence factors of vegetable price fluctuation mainly include supply, demand and other factors. VAR model was used to concretely study the influence factors of vegetable price fluctuation. The result showed that, CPI, GDP, FPPI and APDI can greatly influence change of vegetable price; as time goes by, FPPI and APDI have more and more distribution on the fluctuation of vegetable price; price fluctuation exists expected effect, and producer and consumer

will produce expectation on future price according to the early trend of price, thereby affecting production and consumption, finally, reflecting on price change; inflation or currency factor has the largest impact on vegetable price fluctuation; the influence of cost on vegetable price fluctuation constantly increases.

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ANALYSIS AND COMPARISON OF CHINESE AND FOREIGN FOOD SAFETY LEGAL SYSTEM AND THE ESTABLISHMENT OF SCIENTIFIC LEGAL IDEA

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ABSTRACT

Food security is related to the health and safety of all mankind life, social harmony and national stability. The existing related food safety legal system in our country has many defects; research on the aspect of food safety legal system has a gap compared with the western developed countries to a certain extent. Study of food safety legal system has great significance for improving the current situation of food safety supervision, promoting the healthy development of food industry, enhancing the supervision efficiency of regulators, and maintaining the social stability. Based on the comparison of Chinese and foreign food safety legal system, this paper analyzed the current situation and existing problems of food safety legal system and drew lessons from law system of foreign advanced food safety. In addition, this article built a new scientific idea of the rule of law and put forward some feasible suggestions for the concepts of food safety and the defects of the law system of food safety in China combined with the reality of our country.

1. Introduction

"Food and safety come as the first". Food is the most basic material foundation to the survival of human, and the food security is more related to health and safety of people's life, social harmony and national stability. After entering the WTO, the green barrier of foreign trade has increasing and obvious influence on export trade of China's food. The food safety problem has become the important factor of influencing social stability and developing the foreign trade of food in our country, thereby affecting the process of building well-off society in an all-round way (Huixin, 2014). In this case, the strengthening and improvement of food safety legal system in our country have already become particularly important.

Study of food safety legal system has great significance for improving the current situation of food safety supervision, promoting the healthy development of food industry, enhancing the supervision efficiency of regulators, and maintaining the social stability (Lumin, 2013). This article put forward the suggestions of perfecting the food standards system and regulatory system according to the current situation of food safety in our country combining the reality through the analysis and comparison of food safety legal system, construction of food safety standard system, mature experience and practice of supervision system in the United States, the European Union, Japan and other developed countries. At the same time, the paper preliminarily set up food safety scientific idea of the rule of law suitable for the situation of our country in order

to better improve our food safety law system by exploring the current situation and the problems of food safety legal system in our country, imitating foreign advanced legal system and research results.

2. Materials and methods

In terms of food safety legal system, Japan, the United States and the European Union established relatively perfect laws and regulations system in food hygiene, agricultural products quality, inputs, animal epidemic prevention and plant protection.

The United States is one of countries have the most perfect supervision legal system of food safety in the world, which started the legislation of food safety at the beginning of the founding. These laws and regulations cover all food, form specific and strict standards and supervisory processes for food safety, stipulate the packaging, authentication, identification and detection and test method of imported food particularly, which constitute a very strict legal network of food safety protection (Fredrick, 2008).

The European Union has formed a more stringent food safety legal system after the development of recent years. For example: food hygiene regulations, official regulatory organization regulations of products of animal origin, special sanitary regulations of products of animal origin, and so on. It can be concluded that the European Union constructs the strategic framework of food safety, at the same time further improves and perfects laws and regulations in the food safety so as to provide unified management standards for member countries (Xiuchun, 2011). In addition, the rights and interests of consumers are protected comprehensively by increasing information transparency of quality and safety of food and fodder.

Japan learned a lesson from the past safety accidents and perfected its food safety legal system constantly. Government modified Food Safety Law for 10 times, and implemented The Basic Law of Food Safety. Japan strengthened the risk management after the accident of food safety through legislation and improved the forecast ability of the health effects on food safety (Yiqing and Xionghui, 2010). Meanwhile, the Japanese government made more severe punishment for violation of food safety laws and regulations, which increased the illegal cost of food companies greatly.

Food safety legal system in China can be divided into three levels: first is that laws are formulated by the National People's Congress (NPC) and its Executive Committee, which have the highest legal force; second is that laws and regulations are formulated in accordance with the constitution and law by the State Council; third is that rules are formulated by the ministries and commission under the state council and other institutions with administrative functions according to the laws and regulations.

The framework of Food Safety Law, Safety Law of Agricultural Product Quality as the leading factor, relevant regulations, local laws and regulations and judicial interpretation as the supplement, other laws such as Criminal Law assorted with food safety legal system are basically formed. But these terms of laws and regulations are too general and lack of operability. Some provisions are more principle, broader and also unclear with inaccurate enough definition, and even with ambiguity, restrictive legal provisions, which are exposed its shortcomings increasingly in practice. Most of the existing supporting regulations cannot adapt to the need of effective supervision for food safety in the new situation due to early introduction and low standard. In addition, some provisions are too general, and the related procedural stipulations and supporting regulations are not introduced, which is difficult to perform.

3. Results and discussions

3.1. The problems of food safety law system in our country

Compared with the food safety legal system of the developed countries, food safety legal

system in our country has obvious shortcomings. Although The Food Safety Law of the People's Republic of China that just takes effect has comprehensively regulated regulation measures on major issues in the field of food safety from the respective of overall, legislations in the field of food safety still have many deficiencies as a legal system, shown in table 1.

Table 1. Defects of existing legal system of food safety in our country

Low integrity and operability of Laws and regulations	High-level rules are made, other regulations are introduced early with low standards and narrow coverage, and do not fully display the demand of consumers for food safety except Food Safety Law
Unimplemented food inspection rights	Folk organizations have no real inspection rights. Division of labor of regulators is not clear, which needs to strengthen.
Low intensity of punishment of the existing laws and regulations	Heavy penalties are not taken in food quality safety accident like developed countries. Hefty fines will make its collapse.
Unclear permission and function in law enforcement system	Many problems can't be solved like finding the supervision department to process, and the unclear duties in inter-subjects. Laws and regulations have intersection; law enforcement departments push the responsibilities to each other, and take the credit.
Lack of standardization and sustainability in the process of law enforcement	Inspection and handling are did like a gust of wind according to the terms released by the higher administrative authority after the serious food safety accident. When it ends, this action of cracking down on fake and shoddy food hides, the counterfeiting frauds show up again, counterfeiting fraud floods again.
Uninsured supervisory powers of social organization	Distribution of regulatory power is unbalanced. Food safety is a matter of science, not a matter of political issue, so regulatory powers should be distributed based on scientific and technological level instead of deciding power according to the administrative level and department.

3.2. Discussions

From the current situation of food safety in our country, this paper gave the relevant constructive suggestions on how to set up scientific idea of rule of law of food safety in accordance with the national conditions:

1) Strengthen the construction of food safety law

With the rapid development of modern society, our country cleans up a lot of laws and regulations keeping pace with the times, which has a closer relationship with the international community to a certain extent. But, in fact, the existing law of our nation still has a large gap with the international; it is necessary to revise. Therefore, we should strengthen the experience exchange and cooperation with overseas, focus on the research of foreign law standards of food safety, absorb and draw lessons from foreign advanced experience, explore and develop theory, method and system in line with international standards. At the same time it accords with the situation of our country (Dianhua et al., 2012). The United States is one of the countries in the world that has the best national food security. Its laws and regulations of relevant food safety cover all food fields with many relevant laws and regulations, which set specific supervisory procedures and standards for food safety. Hence, our country should actively learn the advanced parts of the legal system from developed countries in

European and American and perfect the construction of legal system.

2) Establish the basic framework of China's food safety laws and regulations with reference to the international food safety law

There is no uniform law in the field of food safety in our country, the promulgation of the new food law has made up for the blank, but there are still insufficient aspects, which needs the adjustment and revision of related laws, regulations, rules and other relevant provisions by strengthening legislation and food safety and quality, including the current laws and regulations related to food (including agricultural products). According to The International Food Code, we should set up food safety standards system in accordance with the principles of international Codex Alimentations Commission; fully monitor food safety; set up standards and procedures in all the links of the food industry chain; eliminate the so-called "green barriers". Specific standard of management of food safety in advanced countries is formulated by the national special legislative institution, and each kind of product has only one standard with clear rules, which is convenient to implement and execute standard. Environmental protection in foreign developed countries and regions has the characteristics of early starting, great influence, strong environmental consciousness of the public, advanced environmental protection technology, higher environmental standards. Their green technical standards almost have become the pass of the international market (Enchen, 2010). Therefore, we need to speed up the development, reduce the gap with the international standards, get rid of the awkward situation of the export block of green barriers at present stage, and promote the development of green industry through its strong driving force. New sights in the field of food safety in our country will be presented.

3) Integrate legal resources; perfect the existed laws and regulations system

Although a complete and unified food safety law has been made, but the existing law still exists defects, we need to supplement and improve the existing laws and regulations, integrate scattered relevant content about food regulation in various laws and regulations, minimize the conflicts of legislation and law enforcement, solve the chaotic problems of the legal system, guarantee the unification and completion of the law (Yuming, 2013). Relevant special committees or the relevant experts and scholars who responsible for the legislative work in Standing Committee of the National People's Congress drafted and solicited opinions publicly in all directions, absorbed public opinions and restrained attitudes extensively. We should actively push challenge system in legislation. All relevant administrative departments related to content and relevant interests of department in legislation should be avoided in principle. The introduced laws and regulations should gradually improve the corresponding enforcement regulations and detailed rules according to the conditions. The effective control intensity of system of food safety in food safety management should on the basis of well-implemented good manufacturing practice (GMP standard) of food.

4) Establish traceability and commitment system of sales link of food

1. Build system of food production and operation records and realize the traceability of food quality and safety from all the links of production to sales according to the mutual trace principle. 2. Establish commitment of the quality and safety of food and recall system. If the food safety can't achieve the promised specific requirements, manufacturers have an obligation to recall it. 3. Set up public laboratory of food safety and food safety early warning system. Speed up the establishment of an independent, impartial and authoritative public laboratory of food safety. Provide scientific and rigorous technical support for the management of food safety, the accident will be killed in the bud before it happened. 4. Establish responsibility check mechanism to the relevant management personnel, which

make those personnel who do not strictly perform law enforcement also assume corresponding responsibility. 5. Establish and improve the social credit system of food safety, that is, establish credit files of food safety, track and monitor the situations of food quality, safety and health, and then gradually form an evolution mechanism. 6. Strengthen coordination and cooperation between each relevant administrative enforcement department, clear responsibilities of each department, avoid official standard thought, realize the principle of "There must be laws to go by, the laws must be observed and strictly enforced, and lawbreakers must be prosecuted" for concrete embodiment in the field of food safety.

5) Emphasize punishment of the existing laws and regulations and give more sufficient power for law enforcement department

With reference to foreign advanced experience, we can find the basis of improving the level of food safety is the implementation of mandatory regulation to the related food production enterprises. That is to say, only we emphasize punishment of the existing laws and regulations and strengthen the supervision of power, can we protect the implementation of food safety effectively? Food Safety Law increases civil compensation value of unqualified food producers and traders to 10 times from the double regulation of Law on Protection of the Rights and Interests of Consumers. But in practice, because the circulation prices of ordinary food generally are not high, it is just no more than one thousand RMB by increasing to 10 times, which is difficult to talk about punishment for manufacturing and the seller. And at the same time, the damage to the consumer is likely to be long and profound. Compared with any other government activities related to health, food safety needs the continuous and mandatory management most (Xiao'e, 2014)

6) Strengthen power supervision in accordance with the law

National People's Congress at all levels is the most authoritative local supervision agency, and should implement legal supervision and economic supervision work in accordance with the law according to the sacred duty of constitutional. Previous National People's Congress at all levels ignored and let the short-term economic development behavior of "spoil things by excessive enthusiasm" of related government departments and the corresponding law enforcement department slide. We should change the situation; eradicate bad behavior protected by National People's Congress at all levels. National People's Congress should give full play to the supervisory function, start the supervision procedure, discover, correct and cancel the illegal "local rules" and the administrative behaviors of food security timely. Otherwise, the whole industry will be blighted, and the long-term and sustainable development of local economy will be affected.

7) Construct a clear division of responsibilities, coordinated food safety management system

Our country needs to draw lessons from foreign advanced experience of developed countries in food safety management field, clear reasonable division of labor of various government departments for food safety management (Jinzhong, 2012). The main works of establishing a unified supervision and law enforcement system include: 1. promulgate the laws and regulations of national food safety, review and coordinate relevant food safety regulations introduced by local and each department; 2) publish national standards of food quality and safety, formulate quality certification system of food, coordinate and supervise the work of the relevant department; 3) supervise the related work of various functional departments, including inspection, testing and monitoring food quality, etc, coordinate the function between different departments; 4) build risk analysis and risk assessment system of food safety, predict hazard; 5) report the food safety information at home and abroad; 6) strengthen the related

cooperation with international food organization, organize experts to participate in the international food meeting actively, understand and study foreign food quality standards, interfere the development of international rules.

4. Conclusions

Based on the full text, with the continuous and high speed development of economy in our country and the improved national living standard, people pay more and more attention to food safety and propose higher and higher demands. All countries in the world take the improvement and perfection of the food safety legal system as a strategic task and basic work, which are highly focused. Governments around the world have more profound cognition and understanding on food safety issues on the basis of examining the traditional legal system and regulatory system of food safety. Food safety problem concerns about the survival and development of human society, which is a common problem that various countries faces with today. Food safety problem is also about the development of the food industry and the country's economic competitiveness; the solution of food safety problem needs to update concept of governance, emphasize international cooperation. At present, the food safety situation at domestic and international is urgent. It is imperative for food safety law system in China to gear to international standards. We must shorten the gap of international standards of the United Nations food agriculture organization, the world health organization as soon as possible. We can believe that an increasing perfect food safety legal system and a deeply rooted scientific idea of the rule of law will play an important role in social life in our country.

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STUDY ON FOOD SECURITY GUARANTEE FROM FOOD MANUFACTURERS BASED ON SCIENTIFIC OUTLOOK ON DEVELOPMENT

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ABSTRACT
Food security is an ordinary serious social problem at present, and it attracts different attention at different periods. This paper focused itself on the connotation and the fundamental causes of food security in food manufacture. Besides, it also established the food security guarantee system based on scientific outlook on development. Study on food security is related to economic development, political stability and improvement of people's well-being. At present, there are quite a number of potential problems within threatening the food security, including a lack of morality in food manufacturers, ineffective food supervision, and a lack of security awareness of consumers. The solution of these problems in food security lies in enhancing the sense of social responsibility for manufacturers, enhancing the government supervision, improving consumers' awareness of security and building a scientific safeguarding system and mechanism.

1. Introduction

Food supply consists of several segments, such as the manufacture, processing, sale, logistics and consumption of food raw materials. There are different people taking part in these segments, such as people in food product manufacture, processing, wholesaling, logistical distribution, food consumption. Food security is an important part of public health and closely related to the public fitness and life security and of great significance to people's livelihood. There are seriously a lack of adaptability among the supply of raw materials, manufacture environment, processing, packaging, transportation and sales. At present, food poisoning induced by pathogenic microbes and other poisonous or harmful matters and food-borne diseases is the most obvious factor threatening the food security in China (Weichen, 2010; Qingting, 2011; Baoguo, Jingyuan and Jin, 2013; Miao, 2013). Most of the recent frequent food security accidents resulted from the abuse of technology achievements, which was mainly due to enterprises pursuing the maximum benefits by illegal methods. From the perspective of economics, enterprise is a manufacture and business unit aiming at profits. Its basic goal is to maximize its benefits. Enterprise can increase its market competence by reducing its manufacture cost. The cost of artificial raw materials by modern technology is much lower than those with traditional craftwork. Therefore, driven by profits, there are increasingly more food manufacture technologies and technologies of other products which are illegally applied in food manufacture, and more food additives or additives of non-food are applied than necessary, so as to reduce the manufacture cost.

Scientific outlook on development emphasizes the coordinated development as a whole, which means making an overall plan of urban and rural development, regional

development, economic and social development, harmonious development between human beings and nature, national development and opening up. Besides, it aims to realize the all-rounded development of economy, society, culture, and humanity. It is a continuous cycle among food manufacture, processing, circulation and sales. Safety in the whole cycle can only be ensured by safety in every segment. This paper firstly illustrated the meaning of connotation that food security carries in different periods. Based on the scientific development view, it showed that food security in modern sense should not only ensure the public well-being and economic stability, but the sustainable development of nature. Based on the analysis of causes leading to food security accidents from food manufacture, it built a scientific food security guarantee system, namely the people-oriented food manufacture with overall coordinated measures for supervision and sustainable environment.

2.Materials and methods

2.1. Connotation of food security

Food security in original meaning is security in the amount of food supplies. FOA defined the food security in amount in 1974, namely the sufficient food required by everyone to sustain their life in any circumstance. However, with the annual increase of global grain output, the public demand of food has been satisfied already. Besides, at this time food security should be redefined as quality and hygiene security, but there remains some difference between the two. In 1996, WHO defined the food quality security as a guarantee of keeping consumers away from damage in health when manufacturing and eating according to the original use of food product, while hygiene security was defined as every condition and measure in all periods of food chain so as to ensure the food security and applicability (Baoguo, Jingyuan and Jin, 2013; Miao, 2013). In July28, 2003 the ex-president Hu Jingtao comrade put forward the scientific outlook on development, namely persisting in people-oriented, establishing an overall, coordinated and sustainable development concept and promoting the overall development of economy, society and human beings. In this case, the connotation of food security is also further extended, which demands the quality security of food supply, namely ensuring that it will not place any harm on health of human beings while imposing enough nutrition. Moreover, it also demands the environment protection and sustainable resources in terms of sustainable development. In a word, food security is not only related to the public health, but also related to the social and economic development, political, law and moral construction and the improvement of technology.

2.2.Causes of food security problems induced by food manufacture

From the perspective of the food supply chain, security of food raw materials in the first segment is the basis of the rest segments, while the second segment is the guarantee of the whole food security. Therefore, this paper made an analysis of the influence from food manufacturers on food security so as to improve the public awareness.

(1) Immoral act among food manufacturers and disorder market for lack of full information

Our national market economy is far from perfect yet. Manufacturers and business managers are short of information about food security. Food manufactures have more knowledge about the related food quality security, such as pesticide residues in food products and microbe contamination than consumers. In this case, some food manufacturers and business managers will take advantage of their known information to maximize their personal profits. For example, they may provide some fake, outdated or misleading information with omissions, and even sell some fake products with inferior

quality to consumers from immoral manufacture. Consumers are put in a disadvantage with little knowledge and rights for choice in products. In this case, it is hard for them to secure an accurate judgment on security of chosen food, which is likely to lead to the optimizing mechanism in market economy put of order. What is worse, there may be some products with inferior quality competing against those with good quality, which will lead to a disorder food market finally.

(2) Consumers are at disadvantage in profits conflict with manufacturers and managers

Food manufacturers and managers are organizers with strong economic power, while consumers are simply single dispersed economic forces. Consumers are much weaker than food manufacturers and managers. Faced with food security problems, consumers in China have little awareness of rights protection in law. Once profits being harmed, they tend to be silent or simply wait for others to take legal actions first so that they can freely enjoy the result. Therefore, the final consequence can only be that the food security problem fails to be reflected in time and their own personal benefits fail to be protected. On the other hand, in some individual cases, there are few legal measures to protect their personal interests at present. Besides, the cost of rights protection is quite high, and sometimes people simply cannot afford it.

3. Results and discussions

Build a food security system based on scientific outlook on development

3.1. People-oriented food manufacture

Food security can place an impact on public life, social stability and national economic development. A sound food security system is able to guarantee the stability of public lives, and is beneficial to sustain a stable, harmonious and prosperous society and promote the sound development of economic. Manufacturers should have a clear sense of social responsibility, persist in the people-oriented principle of production, and ensure a safe and reliable production and processing. Meanwhile, they should place the public interests at the first place, care for the public well-beings and the continual improvement of their lives. At least, they should not apply to some poisonous or harmful industry ingredients, some unqualified food materials and some hygiene production lines below standard simply for some profits and cost reduction. They should ensure the food security from the first segment in manufacture.

3.2. An overall and coordinated method for food supervision

In order to ensure food security, it not only requires the food manufacturers to equip themselves with a sense of morality and social responsibility, but also requires of the full cooperation with the departments of food supervision. The Ministry of Agriculture in China put forward the pollution - free food action plan and proposed the whole process from farmland to dining-table to be under supervision. However, in actual implementation, there is only supervision form farmland to wholesaling market, and the supervision from wholesaling to retailing market is far from perfect. It can partly guarantee a safe and reliable food circulation process from farmland to the final consumers to ensure the safety in the whole food chain. In terms of food supervision departments, present food security problems impose a heavy challenge on the inspection quality and ability in China. Therefore, we should devote more efforts on food scientific technology, food manufacturing and processing technology, inspection technology and ability. Besides, we should also adopt scientific methods and advanced technology for the overall control of food manufacture, so as to ensure that food products meet the need of standard and safety.

3.3. Sustainable development of environment

Raw materials of food processing mainly come from natural resources. The large population in China places a heavy pressure on our natural resources. Besides, the great amounts of pollutants impose a severe threat on global environment (Yan, Quanfa, Mengjie and Wen, 2011). Sustainable development strategy is an important guideline in China's development in new period. Further cooperation between economic development and environmental protection is supposed to be taken into consideration and achieved. With the limited capacity of natural resources, natural environment is undertaking a quite heavy pressure. Whether in the process of urbanization, or in the continual development of industrialization, the environmental protection in China is still severe and has a long way to go.

At present, we are faced with several environmental problems (Mingliang, 2013; Dajiang, 2011; Lei, 2012), such as water shortage, heavy air pollution, soil erosion for lacking of vegetation and frequent natural disasters in China. However, the global are also confronted a number of environmental problems, such as thinning ozone-layer, global warming, frequent natural disasters, frequent diseases such as Canberra, and drinking water shortage. In this case, sustainable development is supposed to act as the common development strategy of all countries in the long-term. The contemporary development should be carried without affecting the development of our generations. Sustainable development is a brand-new development concept and strategy, and its final goal is to ensure the long-term sustainable development of human society so that we should pay more attention to environmental protection in food manufacture. Manufacturers should make the most of resources from their accession and delivery. Besides, they should also regularly clean up pollutants during manufacture process.

4. Conclusions

Food products impose a potential threat on human life security when imposing abundant nutrition. Especially when faced with modernization of food industry, evolution of ecological environment and the trade globalization, it is of great significance to take control of food security risk by preventing mechanism in an effective and systematic way and to enhance the food security management system. There is a long way to carry the food security into practice. However, if we take the guideline of scientific outlook on development and take the public health at the first place, we are sure to turn the food security risk preventing mechanism into a long-term one with scientific and stable development. In a word, the establishments of scientific outlook on development provide guidelines for the safe manufacture of food in China. While pursuing the maximized profits, enterprises should also persist in the people-oriented principle, respect lives and care for the health of consumers. Besides, they should also make an overall cooperation among different segments in the food chain; place a serious and strict supervision on the inspection process. Finally, as main consumers of natural resources, enterprises should play the role of resources saver, developer and protector. They should prevent any pollution and destruction against environment, and make a regular control and clean of pollutants from themselves.

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ANALYSIS ON THE EFFECT OF A BALANCED DIET ON THE BODY MASS CONTROL AND THEIR BODY TISSUES FOR ATHLETES

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ABSTRACT
This paper aims to analyze the effect of a balanced diet on the body mass control and their body tissues for athletes. In this paper, one healthy female gymnastics athlete was voluntarily included as the study object that had a clear idea of the whole research schema and supervision index. Her body composition before weight control was as follows: 51.6 kg in body mass, 37.1 kg in muscle weight, and 11.8kg in fat, 22.9% in body fat percentage, and 29.1 kg in total water content. This athlete enjoyed a little higher body fat and the first goal for weight loss was less fat. This paper applied a combined method of slow weight control with diet control and more exercises so as to reduce and control her body mass. Besides, the changes of body tissues were also constantly monitored. Within 12 weeks of the weight control schema implementation, she lost 5.4 kg in body mass, including 5.0 kg fat, 0.2 kg muscle and the decline in body mass percentage from 22.9% to 14.8%. In terms of her functional status, in the initial stage of weight control, she often felt a sense of fatigue and hunger. But she still persisted in exercises for this was under her toleration limits. Three or five days later, those feelings began to reduce or even disappear. One week later, she restored her vitality and kept a good feeling about herself with an accurate technical execution. Besides, this athlete was treated with blood routine examination at fixed time during this study. The blood routine was 134g/L before weight control and it was found a rise to 146g/L since week 3 and then it maintained between 146 and 149 g/L. This gave the hint that she acquired some improvement in her body functions during the process of weight control. In conclusion, athletes should apply the combination of diet control and more exercises in reducing and controlling the body mass. Weight control is supposed to be predominated by a slow negative energy balance. Besides, a scientific arrangement of diet and nutrition supplement is also necessary during the process of weight control.

1. Introduction

The body mass of human being is not only determined by heredity, but also affected by some other factors like environment, diet and exercises. There are a lot of athletes who conform to the normal standard in their body mass and fat. However, in order to be more competitive, they need to cut down their body mass rapidly before or during the competitions, or they should keep their body mass and fat under control in the long-term training so as to maintain an ideal body mass for competitions (Lianshi *et al*., 2005).

During the process of weight control in a rational way, we should attach enough importance to a balanced diet habit and a rational nutrition structure. Moreover, we are supposed to combine rationally the weigh

control with the normal exercise plan together. In this way, we can provide a sound physical basis for athletes so that they can give full play to their sports potential and improve their performance in competitions (Hongmei *et al*., 2013).

Weight loss is a technical term in describing some sports events like wrestling, boxing, and combating kind, in which weight of athletes should be strictly satisfied with the standard. In this case, some athletes have to strictly control their intake of food and liquid. But it may induce severe body problems, such as dehydration, the risk of cardiovascular, loss of body protein, mineral salt and vitamin, unbalanced regulation of body temperature, changes in kidney function, impairing of muscles and hepatic glycogen and the obvious lower testosterone level within their body. Therefore, it is of great significance to study the diet strategy during the process of body mass control (Nianjun *et al*., 2007). During this process, athletes should play enough attention on the rational arrangement of the diet and load of exercises, while avoiding the food high in fat. It will do them a great favor to take more food high in protein and green vegetables along with a lower ration in staple food. The intake of calorie from food should simply provide necessary physical strength for training.

However, according to the traditional methods of weight control, athletes may appear with a reclined physical fitness while reducing their body mass, which may leave a quite harmful influence on their training effects and sports abilities. Thus, it is of great significance for athletes to apply a rational method of body mass control and nutritional regulation. In this way, they can both maintain a sound physical fitness and prevent against the harmful effect on their condition in competitions (Yanfen *et al*., 2007). Based on the supervision of body mass control, intake of nutritional diet and the physical fitness for athletes, this paper discussed a scientific method for weight control and nutrition supplement which caters to athletes quite well.

2. Materials and methods

2.1. General introduction to this athlete

She is an international master female athlete and she has won the beam and all-around championship in several major international and national gymnastics competitions. She is 17 years old with 14 training years. She is 51.6 kg in weight and 150 cm in height. She is quite healthy with a clear idea of the study schema and all monitor index. In early 2012, she stopped the professional training for some reason but gradually restored training later. Her body mass was 51.5 kg at that time. In line with the age, height and body mass conditions of athletes when acquiring the best results, her best body mass should be 45 kg so that she need loss more 6.5 kg. Her body composition before weight control was as follows: 51.6 kg in body mass, 37.1 kg in muscle weight, and 11.8kg in fat, 22.9% in body fat percentage, and 29.1 kg in total water content. This athlete enjoyed a little heavier body fat and the first goal for weight loss was less fat. Based on the body mass supervision, it found that there were few differences in her body mass between bedtime at night and wake-up time in the next morning. This gave the hint that she had a quite low rate of basal metabolism.

2.2. Detailed schema for body mass control

2.2.1. Plan for body mass control

The body mass of athlete in this experiment are supposed to reduce to 46kg. In order to attain this goal, a detailed weight loss plan came out. It extended to 12 weeks for a goal of losing 5.6 kg. It was intended to loss 1 kg every week and kept the situation stable for one week. In the initial stage of weight control when she failed to be accommodated, the weight loss standard could be adjusted to a certain extent. When reaching a suitable body mass, we should place more attention on the weight control in case it would be regained.

2.2.2. Schema for nutrition regulation

The diet schema for the athlete before weight loss is shown in table 1.

Table 1. The diet schema for the athlete before weight loss

Heat energy and nutrition	breakfast	lunch	dinner	In total
Total energy/kJ	543.08	397.06	357.73	1297.04
Total energy supplement percentage/%	41.8	30.6	27.6	100
Protein heat supplement percentage/%	29.3	7.1	4.7	15.7
Fat heat supplement percentage/%	51.1	45.0	3.2	36.0
Carbohydrate heat supplement percentage/%	19.8	48.2	92.2	48.4

It is shown in table 1 that the energy intake for this athlete is only 1297.04kJ every day before weight control. The three major nutrition within the consumed food is allocated as follows: 15.7% protein, 36% fat, 48.4% carbohydrate, energy supplement percentage for breakfast, lunch and dinner is 41.8%, 30.6%, and 27.6% respectively.

It was found in the supervision of body mass that there was an obvious decline in her body mass after 1d of training, but a light rise in the next morning. This gave the hint that the athlete consumed much more energies during the day than at night and formed a negative energy balance, which failed to reach the purpose of weight control. Thus, we should relatively make some adjustments on the recipe; reduce the percentage of carbohydrate and fat in dinner. Besides, we should also relatively increase the percentage of vegetable and fruit so that the energy intake in dinner can be reduced. According to the everyday training and the need of weight control for this athlete, this paper made a repeated experiment, applied the analysis and management system software for the athlete and public diet nutrition to work out a recipe for athlete during weight control. The intake of energy and three major nutrition in a recipe is shown in table 2.

Table 2. Intake of heat energy and three nutrition for athlete during body mass control

Heat energy and nutrition	breakfast	lunch	dinner	In total
Total energy/kJ	759.81	969.85	391.62	1297.04
Total energy supplement percentage/%	35.8	45.7	18.5	100.0
Protein heat supplement percentage/%	31.2	33.8	41.0	34.2
Fat heat supplement percentage/%	7.7	25.7	27.3	19.6
Carbohydrate heat supplement percentage/%	60.9	40.5	31.6	46.2

In this recipe during weight control, the total energy intake for the athlete in the whole day was controlled between 2000kJ and 2500kJ, the fat percentage was controlled fewer than 20%, the protein was increased to a percentage between 35% and 40%, and the carbohydrate was controlled between 35% and 40%. So as to ensure the intake of vitamins and minerals during weight control, the athlete was treated with the supplement of compound vitamins and mineral preparations per day.

2.2.3. Schema of training and exercises for athlete

What the athlete needs to cast off is fat, while the professional training for gymnastics athletes is basically anaerobic. Besides they are mainly dependent on glucogen and creatine phosphate as energy origins without too much consumption in fat. Therefore, this athlete is supposed to take more aerobics. Based on this

suggestion, this paper made a 1d aerobic training schema for this athlete, including 30min in joggling (about 200m/min with the maximal oxygen uptake between 50% and 60%), 40min in running on treadmill with 4% gradient at the speed of 6.0km/h and muscle strength exercise carried with little weight, high frequency and more sets, especially more exercises in waist and abdomen muscles. Aerobics were carried 6 times per week. The detailed schema could be adjusted based on her professional skills training status every day. The energy consumed from training and aerobics should basically maintain between 4.2 and 6.3 kJ.

3. Results and discussions

3.1. Changes in body mass and fat

With 12 weeks of weight control and diet control, the changes in body mass, fat, and muscle mass for this athlete are shown in table 3.

Table 3. Changes in body mass, fat, and muscle mass for this athlete

index	T (body mass control) /week						
	1	3	5	7	9	11	12
Body mass/kg	51.6	50.5	49.8	47.9	46.5	46.5	46.2
Body fat/kg	11.8	11.4	10.4	9.2	7.6	7.6	6.8
Body fat percentage/%	22.9	22.6	20.9	19.5	16.3	16.3	14.8
Muscle/kg	37.1	36.4	36.7	36.5	36.6	36.3	36.9

It is shown in table 3 that within the 12 weeks of implementing the body mass control schema, there is a 5.4kg decline in her body mass, including 5.0 kg fat less, 0.2 kg muscle less and fat percentage from 22.9% to 14.8%. Fat is the major part in weight loss so that it is safe to say this schema has reaped good result.

3.2. Functional status of athlete

In the initial stage of weight control, she often felt a sense of fatigue and hunger. But she still persisted in exercises for this was under her toleration limits. Three of five days later, those feelings began to reduce or even disappear. One week later, she restored her vitality and kept a good feeling about herself with an accurate technical execution. Besides, this athlete was treated with blood routine examination at fixed time during this study. The blood routine was 134g/L before weight control and it was found a rise to 146g/L since week 3 and then it maintained between 146 and 149 g/L. This gave the hint that she acquired some improvement in her body functions during the process of weight control.

Weight loss will induce the shortage of VA. In this way, it will first induce the decrease of VA in kidney and further reduce the VA in blood and reduce the rhodopsin in retina, and prolong the time for scotopia. The whole change will cost 3 weeks or so. This athlete enjoyed (558±147) μg/L of VA in her blood before weight control, and spent (84.5±63.9) s on scotopia. After weight control, she enjoyed (576±109) μg/L of VA in blood and spent (119.4±53.5) s on scotopia. However, it is still far from clear about the effect from VD and VE on the sports ability.

A shortage of soluble vitamins will directly affect the energy metabolism in organism, slow down the oxidation-reduction process, induce the decline of endurance and vitality in organism and impose a sense of fatigue and lower exercise efficiency for athletes (Hankez, and Yujiang, 2012). In diet control, the vitamin B1, B2 and PP output from urine was gradually on decline. Five days later, the vitamin B1 output decreased from 263μg to 93μg, and the vitamin B2 from 1130μg to 900 μg and niacin amide from 1.17 mg to 0.97 mg. The rate of decrease reached over 20%.

In the process of body mass control, it found that a decrease in ferritin from (85.1±7.1)

μg/L to (42.1±3.9) μg/L, and a decrease in hematocrit from (45.2±6.0) % to (43.9±4.6) %. Result revealed that after weight control, there was a obvious decline in ferritin ($P<0.05$), and a little decrease in hematocrit ($P>0.05$). All indexed were within the normal range. Ferrum is one necessary trace element for human beings, while ferritin is one of the chief forms in which ferrum is stored in the body. An obvious decline of ferritin in athlete may induce an obvious decline of ferrum reserves within tissues. During weight control, a much less diet intake is likely to induce the shortage of ferrum, increase the risk of anemia and pose a threat on the sports performance (Min *et al*., 2013).

After 12 weeks of body mass control, it found a decrease in serum zinc from (19.12±17.1) μ mol/L to (14.58±1.33) μ mol/L, a decrease in cuprum from (16.99±1.65) μ mol/L to (14.21±1.11) μ mol/L, and a decrease in magnesium from (1.03±0.15) m mol/L to (1.03±0.15) m mol/L. The results show that there is an obvious decline in serum zinc, cuprum and magnesium ($P<0.05$). Cuprum plays an important role in the assimilation, transmission and utilization, while the decline in the serum coprum concentration will directly affect the ferrum assimilation. Zinc element plays an important role in the growth of organism and promoting the gonadal secretion, while it also takes part in the functional activity of over 100 enzymes. The decline of serum zinc is likely to influence the synthesis of androgen. Magnesium is a trace element within human body, and magnesian ion is of paramount importance to the protein synthesis, inhibition of potassium and sodium channels in biomembrane and sustaining the excitability of nerve and muscle cells. Besides, it also works as an activator of several enzymes. Athletes in weight control will impose more controls on the intake of staple food like cereal and they will lose a large quantity of magnesium because of perspiration in exercises. It may be closely related to the muscle crap in some athletes (Lina *et al*., 2014).

3.3. Discussions

Athletes usually have to control their own body mass and fat in order to finish the required load of exercises (Lopez-Varela *et al*., 2000). There are some data showing a negative correlation between the content of fat within excellent athletes and their sports ability ($r=-0.13$~-0.16, $P<0.05$), and a positive correlation between the lean body mass and several aspects including physical fitness, strength, aerobic fitness and the maximal oxygen intake. In paper from Zhang Jun, Zhang Yunkun, et al (Jun and Yunkun, 2010), it was tested that the excellent female gymnastics athletes enjoyed about 10% body fat and about 12% in average athletes. In order to maintain a low body fat, gymnastics athletes have to control and lose their body mass in a long-term or intermittent way. The basic principle of weight loss is to reduce the intake of energy with the increase of calorie consumption within organism so as to achieve the negative balance of heat energy and cast off the unwanted fat within organism. It can be more suitable for athletes to adhere to the principle of weight control in slow way. They also should apply the combination of diet control and more exercises in reducing and controlling the body mass. Weight control is supposed to be predominated by a slow negative energy balance and athletes should focus on reducing fat within body mass. When everyday calorie consumption is between 4184 and 6276 kJ, athletes can reduce weight from 1.0 to 1.5 kg, which will leave low influence on their physical fitness (Yuhen *et al*., 2004). In this study, the everyday calorie intake for this athlete was between 2.0MJ and 2.5 MJ, and the calorie consumption was about 5.02MJ. After one week of training, there was about 1 kg loss in weight, which kept stable for one week. From the analysis of body composition, fat ranked the first goal to be reduced in body mass, which gave the hint that it has received a perfect weight loss effect.

During weight control, diet control is of great significance. When athletes become used to the intake of low energy, they may keep a

good reserve of energy, reduce the rate of metabolism and increase the responses of insulin on food. In this way, their body fat may even be much higher than before. This sheds light on us that too extreme restrictions on energy intake will pose a threat for athletes to sustain a low body fat and induce a vicious cycle for a further restriction on diet (Jie,M. 2012). This gymnastics athlete in this paper enjoyed a low intake of calorie from food before weight control, namely 1.2~1.6MJ per day. However, her body fat percentage was obviously higher than those average athletes, as well as a much lower rate of basal metabolism. Therefore, this study applied some measures so as to improve their rate of metabolism, such as, to increase the aerobics and the protein proportions within food. Meanwhile, they also increase the everyday intake of calorie in a proper way so as to break the vicious cycle from the excessive diet before weight control (Shouji, 2006).

In this study, although the calorie intake for athletes is much less than those recommended daily intake of (200±20) kJ/kg at home. However, the study object has no obvious feelings of dizziness, hunger, and fatigue, but appears to be energetic, able to finish all training and competition tasks successfully, and has a gradual decline in her body mass. These all show that this athlete has acquired a sound effect of weight loss. She can be adapted to a diet with such a low calorie intake, which may be related to her low rate of basal metabolism reduced from her long-term diet habit. But the detailed mechanism is still waiting for further study and discussion.

4. Conclusions

In the allocation of three major nutrition within food, the proper ratio for energy and materials allocation for gymnastics athletes is shown as follows: fat takes up 20%~25% in the total heat energy, protein 15%, carbohydrate (glucose) 60%~65%. The sense of hunger from the process of weight control provides us an uneasy feeling in stomach, sickness and shaking inside. So as to alleviate the sense of hunger, we can properly take more dessert, glucose or fruits during the process of intensive exercises. Besides, we should pay attention to the balance between water and salt. We are not only supposed to keep ourselves away from dehydration, but control the water consumption. When drinking less, it may induce a 10% decline in blood volume and increase the risk of severe dehydration. The water consumption should be kept between 2000ml and 3000ml. Drinking too much is likely to pose more burdens on heart and is not beneficial for exercises. We should take the method of drinking less but more frequently. Under diet control, there is going to be a decline on the heat energy and protein supplement. But in fact, the energy consumption during exercises will not be less. Therefore, it is easy for athletes to feel fatigue, and it can produce a great effect on their composition of human body, and physiological functions like repairing the body tissues. Weight loss should be carried out step by step, with sufficient time for sleep and proper protein and vitamins supplement. Furthermore, we should also enhance the medical supervision, adjust the exercises and recipe. If necessary, we can apply some fortified food which is specially developed for athletes during the process of weight loss. In this study, after the supplement of fortified food, the symptom of dehydration for this athlete was greatly alleviated, the incidence of hypoglycemia and ketosis became less and the burden was relieved from the cardiovascular system. Based on the examination in nitrogen balance, mineral salt balance and vitamins output from urine, it showed the athlete acquired a great improvement in her nutrition status. Meanwhile, it found that this athlete greatly improved her physical fitness and lowered the incidence of muscle cramp. Due to the pressure from themselves and the outside world, plus several other factors like the mental depression from hunger and insufficient energies from diet control, athletes are likely to be rather moody at

times. In this case, we should provide them with more positive encouragement and metal tutorship. By alleviating the internal anxiety, we can minimize the metal and physical influence of weight control on athletes.

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CULTURAL IMPLICATIONS OF FOOD LABELING TRANSLATION FROM THE VIEW OF ADVERTISING AESTHETICS

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ABSTRACT
This paper aims to study on cultural implications of food labeling translation from the view of advertising aesthetics. Comparing successful and unsuccessful cases at home and abroad based on analysis in the view of advertising aesthetics, the conclusion concludes characteristics and cultural implications of food labeling translation, and features of aesthetic translation.

1. Introduction

Advertisement, advertising widely, is the publication of products' promoting activities. And the commercial society full of information has already accepted advertisements (Chunyan, 2009). It has been years that more and more food manufacturers add English instructions to product packages to expand advertising. However, the varied and unreadable translations go the opposite way of advertising (Bo, 2012), which is informed by some scholars and translators who begin to study and investigate the translation of food packages into English. But on the whole, the theory of translating food packages into English is not ample enough, so it seems quite vital to maintain sound approaches to solve practical problems. Danyun Xuan (Danyun, 2011) probed into the regularity of food packages' translated version to analyze the translation of food package into Chinese. She proposed analysis of error types and standards of regulating translated texts to polish the translation of food packages.

Based on source texts, target reader expectations and food realities, Yan Xu (Yan, 2011) recommended translators to strengthen, weaken or simplify the assessments of source text to better realize target texts' expected functions. Besides, Lingqi Wu (Lingqi and Xuan, 2011) explored methods of translating food instructions with the guide by the theory of functional equivalence, but avoiding Chinglish. He concluded that translations of food instructions should take consumption customs under different cultures into first consideration; Chinglish must be avoided while the accordance and communication between source and target texts should be paid attention to. This paper takes mentioned studies as a basis to consult references, investigate English translations of food labeling after investigation, analysis and generalization. And in the view of advertising aesthetic, the emphasis is put on food labeling' cultural implications and translating aesthetics, with the hope of offering translation strategies and finding a perfect theory to direct practices.

2. Materials and Methods

2.1. Research targets

This paper researched on English translations of food labeling, and analyzed hand-made bread with Kee Wah Bakery in Hong Kong along with Easen buoy biscuit in Zhejiang. Firstly, food labeling translations with success and failure were explained based on advertising aesthetics; then English translations of advertising food labeling were analyzed in the view of beauty of arts; finally introductions of cultural implications and translating aesthetics were made. With above three steps, this paper gave some theoretic guidance.

2.2. Reference materials

Papers and materials on English translations of food labeling from libraries, Google Books, China National Knowledge Infrastructure, Wanfang Data and Google Scholar provided abundant references for this research and paper writing. Thus reliable, authentic and practical basis were offered in the research and writing of this paper.

2.3. Investigations

The research classified real translating examples of food labeling of products from supermarkets and Internet, and products given by friends or exported.

2.4. Comparative analysis

Cases with success and failure were selected in this paper to analyze advantages and disadvantages of their translating strategies.

2.5. Generalization

After comparative analysis, this paper summed up and generalized reasonable categories. To be specific, this paper generalized text features, strategy choices and translating processes, and finally came upon solutions with conclusions.

3. Results and discussions

3.1. Translating cases of food labeling based on advertising aesthetics

Commercial competitions became more and more fierce, and food package instructions were more than delivery information of food ingredients and directions. Thereby, advertising and publicizing language emerged. Present food labeling integrated various text types, which could be functionally divided into three types according to Les Text Type, namely informative, operative and heterozygous. Informative texts contained product names, ingredients, weights, directions, guarantee periods and storage means, whose major function was information provider; operative texts tended to have advertising massage, such as historical origin, process publicizing and quality guarantees; heterozygous texts sometimes is the combination of informative and operative texts, which offered food information and were operative, resulting in product advertising and warning (Hong, 2011).

Case 1: successful translation of hand-made bread instructions with Kee Wah Bakery

Source text:

Ingredients: 绿豆粉、砂糖、水、芥花子油、杏仁（木本坚果）、花生酱（花生、砂糖、部分氢化植物油（含有大豆）、食盐）、椰丝、奶粉、杏仁霜（含有栗粉（含有麸质的谷类）、奶粉、杏仁（木本坚果）、大豆制品）、调味料及调味剂。

Target text:

Ingredients: Mung Bean Flour, Sugar, Water, Canola Oil, Almond (tree nut), Peanut Butter (peanut, sugar, partially hydrogenated vegetable oil (contains soybean), salt), Desiccated Coconut, Milk Powder, Almond Drink Mix (contains corn starch (cereals containing gluten), milk powder, almond (tree nut), soybean product), Flavor and Flavoring.

Function: food ingredients explanation for consumers

Intention: delivery of food ingredients

Strategy: literal translation in context, and cultural domestication

Case 2: Failed translation of Easen buoy biscuit in Zhejiang

Source name: 宜生水泡饼

Target name: Yi Sheng Shui Po Cakes

Function: Introduction of product name

Intention: Introduction of product name

Strategy: Literal approach

Analysis on translating

In case 1, the translator adopted domestication in cultural cognition, which enables the target text more natural and local. For example, "绿豆" could be translated as "green been" or "mung bean", but with different references. Most translators might employed "green been" for the color, but in fact "green been" was not proper because "绿豆" here was the raw material for mung been flour in English. Under this condition, "Mung Bean Flour" was much objective. Besides, "粉" in Chinese had diverse references in English, such as flour, powder and starch. Flour was from wheat flour or cereal, and powder was more close to dust, which could be added modifiers, such as milk. While starch was more like organic compound. That was why "mung been flour", "milk powder" and "corn starch" came into being. And "flavor" and "flavoring" in Chinese were almost the same, but they were totally different in English. "Flavor" was more natural and "flavoring" was made for personal preference. The translator translated objectively with the realization of cultural differences. And consumers would be clearer about this product with proper target text translated in domestication.

In the second case, the nice crisp "cracker ball" was common in Asian, but not in Western, with bubble-like appearance. To pass exact information, the translation should consider "coherence rule" to create familiarity for western consumers. However, the translator did not explain the strange product that western consumers unfamiliar with; instead, he or she literally translated "cracker ball" into "Shui Po Cake" containing Chinese Pinyin and the product's nature. Cake was well-know for western consumers, but what is "Shui Po" for? Without detailed explanation, western consumers would buy the product because they treasured food safety. So the translation was against the requirement of accuracy and coherence rule, causing failure in mastering cultural differences. It was advised to turn the translation into "Yi Sheng Cracker balls".

3.2. Aesthetic translation of food labeling

The public used to appreciate beauties passively, but they turned into the main role in beauty appreciation in the society developing, which made them possess more choices. Advertisement, a kind of beauty appreciation, also changed fundamentally to be more personalized, diverse, cultural and interactive. Advertising aesthetics that born with aesthetics and filled with cultural implications induced consumers to successfully purchase through its influence on thoughts of value.

Translations of advertising food labeling were not simply language switch, but also a cross-cultural communication. Advertising labeling was the carrier of humanity, ethical cultures and aesthetics, whose translation would definitely have a great impact on corporate image advertising? Translators were asked to apply translating aesthetic theory and accounted culturology, philosophy, aesthetics and marketing in their translations. Advertising aesthetics was performed in the following three linguistic aspects: (1) easy and pleasing speech; (2) short and concise pattern; (3) positive and semantic fancy. In graceful context, satisfactory translations of advertising labeling should present cultures with rhymes and emotions in short and concise forms.

Sentiments and contexts of source text were reproduced via vivid and lively translation, leading to fascinating and poetic association with a world full of fancies and facts. Consumers would be triggered to have beauty appreciation in such a profound and beautiful environment. On the other hand, advertising labeling translations linked intercultural communication as effective media, displaying cultural uniqueness and meeting consumers'

cultural and aesthetic orientations. Then target texts should did something to perform or expand cultures of source texts to appeal consumers. Target names of labeling ought to be translated flexibly with sound speech and bright rhyme. Besides passing original meanings, Chinese' aesthetic psychology should also be satisfied. To reach this goal, target names would be appealing and easily memorized with alliteration, consonance, vowel rhyme or onomatopoeia. When translating, consumers' aesthetic feeling should be taken seriously to gain ethical sense of identity and get close to consumers. So that sympathetic response urged consumers to have a try or even purchase. In addition to convenience of memory and speech, concise and rhymed target labeling with out uncommon words fancied consumers in applying Chinese multi-meanings. Text fit, harmonic tone and abbreviation could help to achieve the purposes of target labeling (Shaoling, 2010. Shixin, 2011).

3.3. Cultural implications of food labeling

Culture reflected a nation's histories, customs and ways of thoughts. Societies possessed corresponding cultures, including labeling that varied with different significance in different cultural backgrounds. Differences of regions, social values, literary allusions and cultural implications of food labeling were all showed up in Western and Chinese cultural diversity. Because of the theological influence, westerners were with rich religion - consciousness, even in dining. For westerners, Christianity was the foot-stone of values and the leading region. Thus Jesus and Venus, well-known words in Christianity were often used as in labeling. While in China, "dragon" was the totem, usually used in naming foods to pass lucky. Senses of value gave labeling special humanistic connotation. Compared to western styles of expanding and risk, Chinese seemed more implicative, which was reflected in labeling. Western labeling contained the names of founders of brands to manifest individualism; and Chinese labeling of time-honored brands, like Quan Jude were about the emphasis and inheritance of commercial honesty, or the miss and respect of farming. Specialized Chinese terms, such as "Du Kang" (the ancestor of wine-making) related to classical stories or ancient book pushed consumers to keep the product in mind with cultural features to promote the popularity. Many labeling in English originating from historical stories and cultural works also left consumers deep impressions with rich contents (Chen, 2012. Mingqing and Qiaomei, 2012).

4. Conclusions

It is re-creative art practice when translating food labeling, which involves language and culture transformation. Cautious as translators should be, they also should boldly create something. While maintaining cultures involved in food labeling, translators are required to attach artistic conception in translating to make labeling unforgotten and lingering. Because culturology, philosophy, aesthetics and marketing are involved in translating advertising labeling, target labeling emphasizes consonant lyrics and elegant form. While standing out rich cultures and artistic meanings, the translation should consider cultural diversity and the public's aesthetic psychology. To do so, target consumers will be satisfied with emotional and artistic resonance; as a result, advertisers can realize the goal of sale promotion.

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THE INFLUENCE OF FOOD LOADING WITH VITAMIN AND ELECTROLYTE ON PHYSICAL INDEX OF ATHLETES

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ABSTRACT

During the training of athletes, weight reduction and stamina recovery is an important trial of athletic contest. This paper systematically studies the interference of food such as functional drinks, vegetables, meat, eggs to somatic function when on weight reduction. This paper researches the influence of nutriology intervene on the blood index of athletes during slow weight reduction in training, fast weight reduction before the competition and stamina restoring ahead the competition. Twelve athletes of female weight lifting team were selected and divided into experimental group and control group, each with 6 athletes. Athletes of both groups took the same exercise training and diet with same energy. And compared with control group, the experimental group took slim bar and sports nutrition with electrolyte during weight reduction; and strengthened the sports nutrition with fast energy supplement preparations, vitamin and electrolyte during the stamina restoring stage while the control group took relevant placebo. Both groups received blood detection. The results suggested that creatine kinase and blood urea of experimental group during fast restoring stage was much lower than control group; the hemoglobin was higher than control group and the testosterone of both groups were with no difference. The concentration of serum potassium, sodium and calcium of experimental group during the fast weight reduction and restoring stage was distinctly higher than control group. The hunger degree of experimental group during weight reduction stage was lower than control group. Thus we reached the conclusion that the nutritious food intervene can help reduce weight and has fine hemoglobin level, serum creatine kinase level and serum inorganic ion level. This method can maintain the steadiness of internal environment of athletes during weight reduction.

1. Introduction

Weight controlling is inevitable for the heavy sports which classifies according to weight such as weight lifting (Ke, 2011). The research of weight reduction and controlling both at home and abroad has received some successful experience and plays its role in sports practice. But the research and development is scattered and can barely solve the problems from training to competition especially the problem how to control the weight without reducing the stamina of the athletes and quickly restore the stamina after weight reduction. And the weight reduction affects the level of hemoglobin, blood urea and inorganic icon etc, which badly affect the competitive level (Jing Li and Lianshi et al, 2014; Ran, 2014; Yayu L., 2014). This paper researches the scientific method of weight reduction and controlling through analysis of

the influence of nutritious food intervene on blood index of female weight lifting athletes during slow weight reduction during training, fast weight reduction and stamina restoring before the competition and provides scheme for stamina supplement research during weight reduction.

2. Material and methods

2.1. Object of study

Twelve athletes of female weight lifting team of Gilin province were selected, with whom the average age was 16.8±4.6 years and the average height was 157.1±7.7 cm. The athletes were randomly divided into two groups with same number of people, among which the average weight of experimental group was 67.48±14.26kg and control group 67.44±15.51kg.

2.2. Food scheme

First stage: totally 8 days, marked as S1, S2, S3, S4, S5, S6, S7, S8. Both groups ingested caloric according to the standard of 28.2±3.6 caloric per kilogramme. Experimental group took 50g slim bar instead of staple food with same caloric and 12 pieces of L-carnitine each day (Jun et al, 2006). Control group took no slim bar.

Second stage: totally 3days, marked as F1, F2, F3. Both groups ingested caloric according to the standard of 10.1±0.9 caloric per kilogramme. Experimental group took 100g slim bar, 12 pieces L-carnitine, 2 pieces vitamin complexing agent and 4 pieces of electrolyte capsule while control group took placebo of the same quantity.

Third stage: totally 3days, marked as P1, P2 and P3. Both groups ingested caloric according to the standard of 26.1±4.0 caloric per kilogramme. Experimental group took 50g slim bar, 40g sprint energy pump, 20g whey protein, 12 pieces of L-carnitine, 2 pieces of vitamin complexing agent and 4 pieces of electrolyte capsule while control group took same amount placebo.

When the food scheme is applying, the athletes were arranged to take strength training every day combined with aerobic exercise such as basketball, swimming and jogging etc.

2.3. Determination methods

During the experimental determination, the weight of both groups was measured every day. The body composition of the athletes before the weight reduction experiment and at the time point of S8, P1 and P3 were detected. Among which, serum creatine kinase, blood urea, hemoglobin, testosterone and the concentration of serum potassium, sodium and calcium were included (Jing, Li and Lianshi et al, 2014).

2.4. Statistical methods

Statistical analysis was performed using SPSS software, all of the experimental data was expressed as means ± standard deviation and T test was used to calculate the significance testing. All results were considered statistically significant as $P<0.05$.

3. Results and discussions

Table 1. Suggests that there was no obvious difference on weight between experimental group and control group during all the stages

Time	Origin	S8	F1	F2
Experimental group(kg)	67.4±14.2	66.3±14.4	65.8±14.1	65.1±14.1
Control group(kg)	67.4±15.5	65.3±15.5	65.5±15.4	65.1±15.2
Time	F3	P1	P2	P3
Experimental group(kg)	65.1±14.1	64.6±14.1	64.1±13.8	64.5±14.4
Control group(kg)	64.9±15.2	64.3±15.5	64.1±15.4	64.5±15.6

Table 1 show that the weight has no obvious difference between experimental group and control group during SLOW, FAST and POST period.

Table 2. Suggests that the body fat reduced steady and there was no obvious difference on body far between experimental group and control group during all the stages

Time	Origin	S8	P1
Experimental group(%)	32.32±8.82	27.94±7.02	27.10±6.63
Control group(%)	32.57±5.36	30.11±6.89	29.31±7.51

Table 2 suggests that the body fat level reduced steady. There was no obvious difference of body fat between experimental group and control group during SLOW, FAST and POST period.

Table 3. Variation of blood biochemical index during the weight reduction

Index	Group	Origin	S8	P1	P3
Creatine kinase U/L	Experimental group	172.1±85.4	218.6±61.3	179.2±41.8	130.2±30.6
	Control group	172.0±109.6	243.2±107.8	186.4±52.6	188.6±52.3
Hemoglobin g/L	Experimental group	5.95±1.59	5.41±1.80	5.36±1.15	5.23±1.36
	Control group	5.87±1.33	5.55±1.46	7.64±2.03	7.06±1.98
Hemoglobin g/L	Experimental group	138.5±7.9	135.3±7.0	135.2±7.4	131.3±6.9
	Control group	134.3±6.6	132.1±6.9	123.1±6.3	124.3±6.8
Testosteron eng/dL	Experimental group	76.1±28.7	63.2±17.4	48.2±18.0	——
	Control group	77.4±44.0	59.67±14.2	49.7±12.78	——

From table 3 we can see, the creatine kinase and blood urea of experimental group during the second and the third stage period was obviously lower than control group, and the blood urea of control group has risen obviously. After the weight reduction, the hemoglobin of both groups has reduced while the hemoglobin of experimental group during the second and the third stage period was higher; the testosterone of both groups during the weight reduction has no obvious difference. Scientific weight reduction and controlling with scientific nutrition supplement rapidly promoting the body restoring after the weight reduction can make sure the athlete reach he best function state before the competition. The experimental group and control group of this research applied the same training and diet scheme. The difference was the experimental group took slim bar, vitamin and electrolyte during the weight reduction and nutritious food strengthened by rapid energy supplement preparations, vitamin and electrolyte while the control group took placebo instead. The results showed, the serum creatine kinase and blood urea of experimental group during the third stage period were lower than control group while hemoglobin was much higher than control group. The concentration of serum potassium, sodium and calcium of the first and

second stage period were much higher than control group.

Besides vitamin and electrolyte, the other factors of food affect the weight of athlete to a certain degree. In Weight Reduction Methods and Notes for Athletes Before the Competition (Long and Jianjun, 2014), Sun Long suggested drinking water during slow weight reduction should not be over controlled and the intake of water should be around 2500ml and more than 500m/d so as to excrete the metabolite. When reduce weight by simply reduce the intake of energy the body fat may reduce and meanwhile weight and muscle will reduce. But when considering the performance of athletes, it is advisable to control the diet properly.

Thirty minutes of aerobic exercise every day can help reducing weight and a mass of sports has better efficacy. If the weight is reduced too fast during fast weight reduction period, the body may get hurt. A few days of abrosia or unreasonable diet structure makes the metabolic disturbed and brings acute energy deficit thus generates physiological stress to body. For example, if the body lost protein, negative nitrogen balance appears and large number of vitamin run off thus the physiological accommodation may weaken. As fast weight reduction brings away lots of body fluid, the dehydration frequents and affects the normal material metabolisms which reduce the output of the heart. The moisture nutrition supplement reduces and renal blood flow decreases thus the output of potassium increases.

Dehydration makes the athletes mouth parched and tongue scorched, eye socket subsided and exhausted. Zhang Lu et al, in Research on the Methods of Weight Controlling before the Competition for Male Sanda athletes (Lu Z. et al 2014) applied dehydration to reduce weight temporally. There are certain people who control the weight applying this method. The method of dehydration includes control the intake of water and evaporating water by profuse sweating. The method of dehydration reducing weight is harmful to the health. As water contains no thermal energy, dehydration can not reduce fat. Conversely, as the water balance inside the body is broken down, the plasma volume decreases, systolic pressure reduces and heart rat accelerates thus the athlete is physically weakened and even convulsion and faint may happen when the situation gets worse. The constant of weight depends on the intake and consuming of energy.

It is scientific to formulate new training schedule for those whose weight needs to be reduced. Besides the normal training, there is extra training formulated according to the physical condition of the athlete to enhance the training. The method of energy consuming should be combined with training closely and improve the energy supplement during the weight reduction thus elevates the performance. Applying this method, the increasing degree and speed should be noticed so as to avoid the situation of over fatigue; and the relation between increasing amount the time of competition should be considered so as not to affect the regular performance during the competition. In the research of this paper, the concentration of serum potassium, sodium and calcium of experimental group during the second stage period is higher than control group, the hemoglobin of experimental group during the second and the third stage period were obviously higher than control group and maintains the level before weight reduction, thus the athletes have fine physical function to participate in the competition which has direct correlation with the nutritious food strengthened by electrolyte and vitamin.

4. Conclusions

Scientific nutrition intervene can assure the weight reduction according to the fixed target and keep reasonable hemoglobin level, reduce the level of serum creatine kinase and blood urea which maintains the fine physical function. The research shows that reasonable supplement of nutritious food such as electrolyte drinks, fresh vegetables, meat and

eggs can maintain the serum inorganic icon level and protein level for those who is on weight reduction and assure homeostasis.

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ANTI-FATIGUE EFFECT, COMPONENT ANALYSIS AND CHARACTERISTICS OF MARKETING CONCEPT OF SPORT NUTRITIONAL FOOD

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ABSTRACT
This paper analyzed the concept and functionality of sport nutritional food and the characteristics of marketing concept and compared the sport nutritional food in our country by literature, experimental comparison and comparative analysis. Finally, some suggestions for the development of sport nutritional food 6were proposed accordingly.

1. Introduction

Modern competitive sports requires higher on the physical power, physical ability, energy mobilization, muscle power and nervous reflex. There is only gap of a few hundredths of a second or a few tenths of a centimeter between success and failure. Sport performance has been closer to the extremity of human body capacity, and super strong training is necessary in order to create a new performance. Super strong training requires higher on the nutritional food. Moreover, with the booming of fitness exercises, nutritional supplement becomes an indispensable aspect in realizing true healthy life. Therefore, sport nutritional food draws more and more attention, thereby proposing new challenges for the development of sport nutritional food industry (Guoyu 2012; Qingli and Guoyu, 2011). Sport nutritional food industry in our country originates from meeting the need for improving performance of competitive sports. The main consumption group at that time is professional athletes. In the article of Research on the Healthy Marketing Model of China Functional Foods, Zheng Meng et al. suggested to induce healthy marketing pattern into healthy nutritional manufacture industry, that is, with quality and honest as fundamental; precisely positioning and pursue for differentiation; adopt flexible and effective marketing combination (Meng *et al*., 2008; Suhe, Muyi, Zeyi and Yunbo, 2011). This paper stated the function of sport nutritional food by analyzing the status of race walkers after drinking sport drink, made deep analysis on sport nutritional food, and finally proposed development suggestions for sport nutritional food in our country.

2. Material and methods

2.1. Research materials

The research objects were 12 cases of male walkers from Physical Culture Institute of some college, ranging from 18 to 23 years, 1.68 to 1.73 m, and 58 to 66 kg. They were all level one or level sportsman, without any acute or chronic disease history and with good condition.

2.2. Research method

Athletes were randomly divided into experimental group and control group. Double

blind method was adopted. In the period of winter training stage with mass exercises, everyone in the experimental group took 750 ml sport drink each day while the control groups took the control drink with the same color, taste and amount as the experimental group for one month. Aerobic and anaerobic capacity, biochemical indexes of two groups of athletes were detected before and after taking the drinks. We searched for a large amount of papers and data about the development of sport nutritional food industry through China National Knowledge Infrastructure (CNKI) and Google Scholars, hence providing rich literatures, reliable and real practical basis for the research and writing of this paper.

3. Results and discussions

3.1. Anti-fatigue effect of sport drink to walker

After taking the drinks, power of athlete in the experimental group was higher than before drinking and the control group, when the blood lactic acid was 4 mmol/L, moreover, the recovery of heart rate 15 min after aerobic exercise was faster than the control group. The experimental results demonstrated that, one month of sport drink taking could speed up the heart rate recovery of athletes in experimental group within 15 min after anaerobic exercise and aerobic exercise, faster than before taking. It proved that, this drink is helpful to the recovery of heart rate after aerobic exercise. However, the heart rate recovery of the control group after aerobic exercise was slower than before taking the drink, since the amount of exercise in winter training stage was large and the fatigue accumulated is not easy to recover. After taking the drink, the heart rate recovery of the experimental group was consistent with before winter training stage. It indicated that, that drink was helpful to eliminate the fatigue accumulation brought by training and promote the recovery.

3.2. Concept and functional component of sport nutritional food

In recent years, sport nutritional food develops rapidly. In 2009, we defined sport nutritional food in GB/T 24151-2009 (General Rules for Sport Nutritional Food) as “food with nutritional substances that can supplement or meet the special demand of exercise”.

Sport nutritional food, in fact, is some highly purified and condensed nutrient, widely existing in food. Nutritional components or their contents of sport nutritional food are all focus on the physiological need matching of sport group, which is remarkable different from ordinary food and heath food. The function of sport food mainly realizes through the functional components that are inherent contained or added. Therefore, the selection and matching of functional components is the key for processing and developing of sport food (Wenbo, 2010).

1) Soybean peptides. Soybean peptides are the protein hydrolysates obtained after soybean protein through the action of protease and special processing. It can promote restoration of red blood cell and speed up the recovery of muscle. After absorbed by human body, it can be made use of by the body without liver metabolism and can involve in organizational construction of human body. Moreover, it can improve serum testosterone and promote muscles. In addition, because of its functions of anti-oxidation and anti-radical, soybean peptides can reduce post-training muscle damages, enhance muscle tolerance and promote fatigue recovery. That is why in recent years, various products containing active peptide have been explored and applied in sport foods.

2) Natural ingredients of anti-oxidation free radical. If people have strenuous exercises, oxygen free radicals of tissue cells will be damaged for the increase of energy consumption, acidic metabolites and auto oxidation within body. Generally, functional ingredients regarded as anti-oxidation free radicals include superoxide dismutase,

lycoypene, capsicin, allimin, genistein and puerarin. Besides it has been a hot research of finding materials from natural foods to remove free radicals.

3) Creatine. Creatine, consisting of arginine, glycine and methionine is the raw material of ATP (adenyl pyrophosphate), which supplies energy for muscles' quick action and snapping motions. As the most popular energy supplement, creatine is added when repeated movements are necessary to improve kinetism in short times with high strength, which can be found in researches conducted in recent years.

4) L-carnitine. L-carnitine, a kind of carnitine, is a nutritional supplement that can safely and effectively promote the oxygenolysis of fatty acid. Besides, it acts as the carrier of fatty acid when it pushed fatty acid into mitochondrion to have oxygenolysis. As for sports in a long time with high strength, L-carnitine speeds up fat oxidation, reduces glycogen consumption and relieves fatigue.

5) Taurine. Taurine, some amino acid contained in general muscles, is a sports supplement for accelerating muscle growth. Physiologically acting as insulin, taurine can control musculin decomposition to enlarge and strengthen muscles. Generally speaking, taurine is added to fruit juices with mineral substances, such as Ca, Mg and K, and nutrients to produce sports drinks on markets.

3.3. Classification of sport nutritional food

Sport nutritional foods were classified by GB 24154-2009 General Provision of Sport Nutritional Food according to different demands of energy and nutritional foods (Wenbo, 2010), which are shown in table 1.

Table 1. Classification of sport nutritional food

Classifications	Notes
Energy supplement	Mainly consisting of carbohydrate, this kind of sport nutritional food can supply energy in a fast and long-lasting way. The major functional factors include glucose, adenosine triphosphate, dicarbonate, creatine and carnitine.
Energy control	This nutritional food meets the demand of weight control and reduction with low energy and fat.
Supplement of Protein and its hydrolysates	The food is suitable for body tissue repair and muscle growth because it supplies protein, peptide and (or) their derivants. Besides, immediate supplement of amino acid after sports speeds up muscle recovery, which is beneficial for sports effect improvement and physical strength recovery.
Supplement of vitamins and minerals	The food supplies vitamins and minerals consumed in sports. Athletes who are trained or exercise for a long time are in higher demand of vitamin and mineral salt than ordinary persons.
Supplement of nutrients for sports fatigue recovery	To maintain achievements, athletes have to continuously put up with sports and training that exceeding physiological limit. So the key of successful missions lies in post-training recovery.
Others	Other sport nutritional foods include those foods for sports protection, strength improvement, metabolism regulation and neurosecretory activation.

3.4. Marketing situation and problem analysis of sports nutritious food in our country

①Marketing situation of sports nutritious food in our country

With the improvement of domestic living standards, people put more emphasis on exercise and nutrition. How to make the citizen realize the effect and advantage of sports nutritious food and how to occupy the market at a faster speed, achieve leading position of

market are the focuses that sports nutritious food manufacturers pay attention to when considering the marketing strategy. However, the sports nutritious food industry of sunrise industry that offers support for human health is in danger of disordered competition, because of the immature market consumption environment, fierce desires of grabbing market opportunities between manufacturers and mentality of dominating exclusively and high profit (Zhenya, 2012; Guiping 2008; Liwei, Hongjing, Hong and Chao, 2008).

② Problem analysis of sports nutritious food marketing in our country

There is need to highlight that nutritious food has the basic elements of full filling in abdomen and good flavor as well as the functional characteristic of "nutrition" compared to general food before we discuss the problems of sports nutritious food marketing in today's market in China. Only when nutritious food has the characteristic of "food" and the function of "nutrition", can it realize its value. In the presence of much controversy and concerns of food safety, nutritious food marketing must first bear moral, honesty and responsibility, and prevent sports nutritious food industry from disordered competition and pathological development from the beginning. Sports nutritious food guarantees its function of sports nutrition, also makes the "nitrification" marketing at the same time (Qixian, 2011; Chengtao, 2007).

The problems of sports nutritious food marketing can be summed up as follows so far:

First is quality. Sports nutritious food is a food directly relates to the health of exercise people, quality should be the most important. But the situation is that many products are labeled sports nutritious food now, and the nature of health care of sports nutrition makes no difference. Counterfeit products are around us, and even some inferior goods not only do not have nutritional function, but also damage the body of eaters. Many manufacturers just use the names of sports nutritious food as hype, it is unworthy of the name or the title.

Second is advertisement. From the advertising of health care products in early years, we can see the dominant of marketing of health care products does not lie in the effect, but in the advertising campaign for consumers. The main functions of sports nutritious food are to recover physical strength after exercise and promote exercise effect, but its functions are often exaggerated in the ad Third is price. Taking advantages of the novelty of sport nutritional food, and the curiosity and ignorance of consumers, manufacturers drive up the price. Besides, they make use of the view that price goes positively with quality to cause some misunderstandings. Consumers are likely to regard sport nutritional food as advanced health-caring products with better effects than other general products, which can bring manufacturers excessive profits. vertisement.

As for sport nutritional food in primary development, a special marketing environment comes into being because of market demand, consumer admiration and national encouragement, which is destined to create a crop circle of blind pursuit of high profits.

3.5. Suggestions for the development of sport nutritional food

Since China is a country with largest population and greatest potential for development, sport nutritional food definitely has bright prospects in China. The following features will show up in the trend of future development of sport nutritional food:

First is the popularization of sport nutritional food. If national economy boosts and GDP rises up, sport nutritional food will become ordinary food that will not be abandoned by consumers for its price. Besides, the industry of sport nutritional food will unceasingly expand with more types in a larger amount to satisfy consumers' needs.

Second is the improvement of standards for sport nutritional food that are guide lines for the development of sport nutritional food. Only with standard rules can sport nutritional food be

controlled to develop in a healthy way. Further foods pay more attention to body promotion and effective energy release to achieve healthy sports and healthy improvement of physical quality (Zhencheng, Mingwei, Xiaojun, Yan, Ruifen and Yuanyuan, 2012).

The last one is better qualified sport nutritional food with the combination of traditional Chinese medicine technology. The combination enables athletes to release their powers without reservation and meanwhile to enhance physical health; In addition, it removes sports damages and effectively regulate athletes' self-functions.

4. Conclusions

At present, sport nutritional food has caught the eye of large-scale food enterprises. However, only a few enterprises take up the research and manufacture of sport nutritional food, occupying only professional teams and fitness clubs. But this is far away from the demand of body building from 0.4 billion Chinese. It is an urge to development the powerful potential of sport nutritional food markets. Rapid and violent development of sport nutritional food industry can be witnessed in the near future.

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INFLUENCE ON AGRICULTURAL INDUSTRY BY CHANGES OF FOOD CONSUMPTION PATTERNS

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ABSTRACT
This paper analyzed the residents' food consumption changes in China from 1990 to 2011, as well as predicted the room for improving national food consumption level per capital. It found that with the quickening urbanization, residents continued to spend less and less on grain consumption while more and more on animal food, like meat, milk and eggs and produce from garden, like melon and fruits. In the end, it discussed the impact of changes in food consumption structure in China's quickening urbanization on the development of agricultural industry.

1. Introduction

Food provided by agriculture industry is one of material bases to sustain human's life (Shanbin, 2013). Development history of many countries in the world proves that the public lifestyle and food consumption structure keeps on changing with the development of social production and improvement of lives, which further leads to a transition in national agriculture industry structure (Gujia, 2013; Xiang, 2011). Since 1978, with the rapid development of national economy, it has witnessed a greatly improved life of rural and urban residents, a gradual change in their food consumption structure, as well as a new development opportunity imposing on our national agriculture.

At present, it is the study with the greatest approval on this matter in theory cycle is the one on our national food production and the food consumption and nutrition level of residents from Chen Yilun, et al. Besides, there are also some other studies on this subject, for example, Wang Enhu, et al made an analysis about the tendency of Chinese urban residents consumption by econometric model, and then discussed the development strategist (Enhu and Xuanliu, 2007) of our national agriculture. Liang Fan and Lu Qian made a dynamic analysis about the food consumption for groups with different incomes by AID model, according to consumption data of our national rural residents from 1995 to 2010 (Fan, Qian and Haimei et al, 2013). Cao Zhihong, Chen Zhichao, He Jinmin made a quantitative analysis about the changing tendency and features of the Chinese urban and rural residents' food consumption by making a comparison of relationship between the animal food and plant food in weight, energy and emergy form, which is based on energy analysis theory (Zhihong, Zhichao and Jinmin, 2012).

However, most of present studies focus on the quantitative analysis of changes in Chinese urban and rural residents' food consumption structure, while neglecting that these changes are not simply a single factor affecting the development of our national agriculture. We are supposed to combine together other

important historical conditions facing the development of our national agriculture. This paper, based on the changes of Chinese residents' food consumption structure, discussed the effect of changes in food consumption structure in China's quickening urbanization on the economic development of agricultural industry.

With the continual rapid development of economy, the lives of urban and rural residents all have improved a lot and there are great changes in Chinese urban and rural residents' food consumption structure as well. Figure 1 and figure 2 portrays in detail the changes of urban and rural residents' food consumption structure from 1990 to 2011 respectively.

2. Material and methods

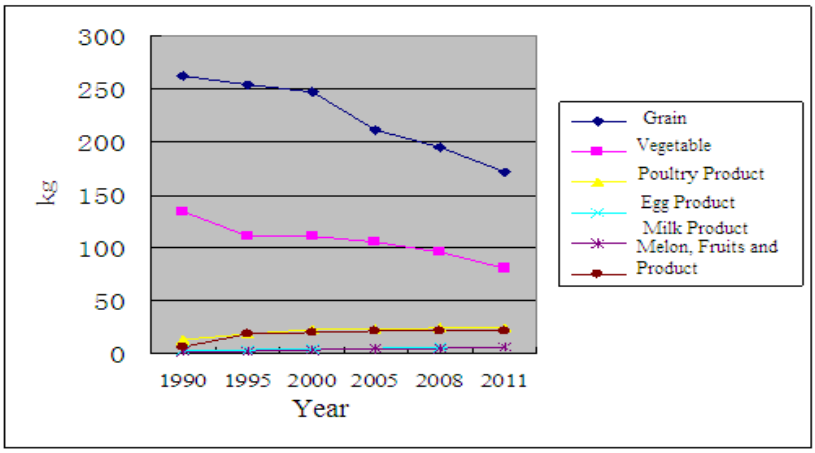

Figure 1. Change of rural residents' consumption structure from 1990 to 2011 in China

From figure1, it can be seen that among main products bought by every Chinese rural resident on average, grain reduced from 262.08 kg in 1990 to 170.74kg in 2011; milk products increased from 1.1kg in 1990 to 5.16kg in 2011, poultry products increased from 12.59kg in 1990 to 23.3kg in 2011; vegetable reduced from 134kg in 1990 to 89.36kg in 2011; egg products decreased from 2.41kg in 1990to 5.4kg in 2011; melon and fruits and the products increased from 5.89kg in 1990 to 21.3kg in 2011.

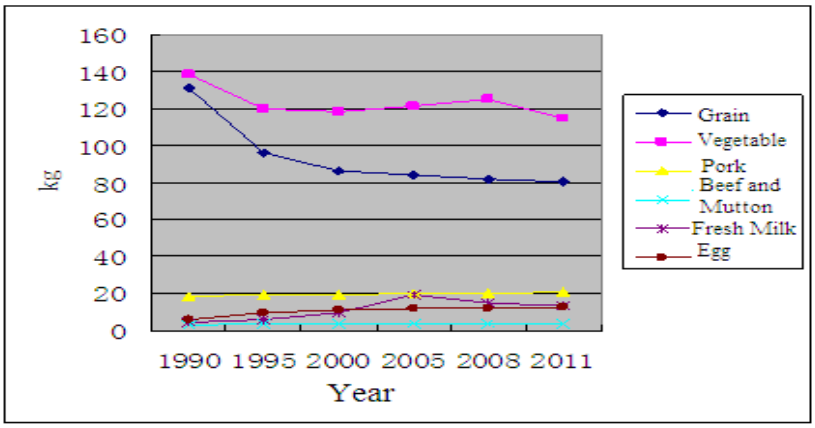

Figure 2. Change of urban residents' consumption structure from 1990 to 2011 in China

From figure 2, it can be seen that among main products bought by every Chinese urban resident on average, grain reduced from 130.72 kg in 1990 to 80.71kg in 2011; milk products

increased from 4.63kg in 1990 to 13.7kg in 2011, pork increased from 18.46kg in 1990 to 20.63kg in 2011; fresh vegetable reduced from 138.7kg in 1990 to 114.56kg in 2011; eggs increased from 5.69kg in 1990 to 12.74kg in 2011;beef and mutton increased from 3.28kg in 1990 to 3.95kg in 2011.As a whole, food structure of residents in China is experiencing the transition from plant fiber as main part to the combination of animal fat with high protein. Consumption of animal subsidiary foodstuffs (fish, meat, egg, milk) is gradually rising year by year, especially for milk and its product. On contrary, the grain consumption is rapidly reducing, which shows the substitution effect of animal subsidiary foodstuffs. Compared with vegetable, the fruit consumption is a bit less but shows the tendency to increase. According to statistics of food supplies in different countries and districts from the FAO, the nutrition level per capital in China mainland is close to that in Japan, Taiwan district, and the South Korea, namely 3kcal or so per day. However, in terms of food structure, the consumption level of fish, meat, eggs and milk is still quite low and has a large room for improvement.

3. Results and discussion

3.1. Estimate of room for improving the national food consumption per capital

This paper, based on the average consumption of urban residents and those income group making up 40% in middle and upper class of urban residents, reckoned the room for improving the national food consumption (table 1) (Peng, Kangning and Qian, 2012). The national consumption of milk products per capital in 2011 was 11.67kg, while the consumption of milk products by rural and urban residents per capital was 5.16kg and 17.9kg respectively. The room for improving the two consumption is 53% and 101% from the urban average consumption and 40% urban residents in middle and upper class per capital. The national consumption of melon and fruits was 36.97 kg in 2011, while the consumption of melon and fruits by rural and urban residents per capital was21.3kg and 52.02kg respectively. The room for improving the two consumption is 41% and 72% from the urban average consumption and 40% urban residents in middle and upper class per capital. From the above, it suggests that there is a huge room for improving the consumption of vegetable oil, meat, egg products, melon and fruits, and milk products, which can reach 101% at largest or 17% at least.

With the continual improvement of income, a consumer requires not only to be fed, but also to be nutritional and balanced in the pursuit of quality. In fact, Chinese traditional ratio among grain and meat and vegetable has turned from 8:1:1 to 4:3:3. This change is easy to overlook but leaves a great impact on China's needs of produce (Linhai and Juan, 2010)

Table 1. Estimate of room for improving the national food consumption per capital (measured as kg)

item	National consumption per capital	Rural consumption per capital	Urban consumption per capital	Consumption of 40% urban residents in middle and upper class per capital	From the room for improving urban consumption per capital	From the room for improving consumption of 40% urban residents in middle and upper class per capital
vegetable oil	7.94	6.6	9.26	9.3	17%	17%
pork	17.55	14.42	20.63	22.9	18%	30%
beef	1.89	0.98	2.77	3.21	46%	69%
mutton	1.05	0.92	1.18	1.36	12%	30%
egg products	7.80	5.4	10.12	11.28	30%	45%
vegetable	101.96	89.36	114.56	122.98	12%	21%
melon&fruits	36.97	21.3	52.02	63.71	41%	72%
milk products	11.67	5.16	17.9	23.42	53%	101%

3.2.Opportunities imposing on the agricultural development in China

According to the above survey, the room for improving the national consumption per capital of vegetable oil, meat, egg products, melon and fruits, and milk products remains huge. These needs of produce are going to place great opportunities on China's agricultural development. Farmers are investing more agricultural resources on produce with higher value. These all enable the China's traditional agricultural production with low efficiency, which is overcrowded and predominated by grain, to be transformed into the production of apple and fish which is both labor and capital- intensive with high efficiency and a rational scale (Xiaoti, 2013).

Nowadays, with the quickening urbanization in China, the non-agricultural labors in rural and urban area are increasing rapidly. In China, the non-agricultural employees in rural and urban area increased to 498,19million in 2011 from 279,10million in 1990, while the rural population reduced to 656,26 million in 2011 from 841,38 in 1990 (Liqiang and Zhi, 2014). The reduction of agricultural employees and population will lead to two results: including there will be fewer people sharing agricultural income and higher income of farmers per capital; and there will be more people turning to business and industry, and a higher income of these people will lead to a higher agricultural consumption. Therefore, the rapid increase of non-agricultural laborers in rural and urban areas will further present the changes in our national food consumption structure, which is going to lead to the changes in needs of produce and further promote the agricultural development.

Besides, farmer's specialized cooperatives develop rapidly in recent years. In July 2007, the law of farmer's specialized cooperative was officially implemented. Since then, farmer's specialized cooperative has witnessed a rapid increase in the total number, total funds and total members, and an obviously enhanced drive effect. According to the statistical data from Ministry of Agriculture and State Administration for Industry and Commerce of the People's Republic of China (SAIC), there were 26.7 thousand farmers specialized cooperatives in China in 2007, which increased by 33% compared with that in 2001. The annual increase rate was 5.5% then. In late March 2011, we had 407.6 thousand farmers specialized cooperatives, which increased by 93% compared with that in 2007. The annual increase rate was 23.2% then. In terms of the total members of farmers specialized cooperatives, in late 2010 there were 28 million new farmer accounts in the cooperatives, which made up over 10% of farmers nationwide. Compared with 2001, there is 2,54million new farmer accounts annually (Yanjun, Jiaqing and Feng et al, 2014; Xiaoli, Heng and Haijing, 2013). The rapid development of farmer's cooperatives not only promotes the modernization of agriculture in China, but enable the combined farmers to be potent enough to act against the business capitals in circulation. In short, the rapid development of farmer's cooperatives helps farmers to receive more financial returns when changes in food consumption structure lead to changes in the need of produces, or changes in the sales volume of produces, which will promote the sound development of our national agriculture (Dong, 2011).

The quickening urbanization in China speeds up the changes in urban and rural residents' food consumption structure, and meanwhile imposes an unprecedented opportunity on the development of our agricultural industry. However, we should also pay attention to the following two points along with the development: (1) we should encourage the apple and fish production with a rational scale, which is both capital and labor intensive. These not only adapt to the change of market demands and promote the further development of agricultural production, but also increase the income for farmers. (2) We should enhance the investment in agricultural infrastructure and technology. Only with an improvement in our

national agricultural productivity, can we grasp the opportunity to develop the agricultural industry economy from the changes in Chinese residents' food consumption structure. We should speed up the development of cooperatives, especially improve the quality. Government is supposed to enhance its function of guidance and management so as to prevent against some illegal cooperation.

4. Conclusions

From the above suggestions in this paper, we can get the conclusion as follows:

(1) With the continual development of our national economy and the quickening urbanization, Chinese residents' food consumption structure is changing. There remains a huge room for improving the national consumption level per capital on on vegetable oil, meat, egg products, melon and fruits, and milk products. Demands of these produce will impose great opportunities on the agricultural development in China. (2) The rapid increase of non-agricultural labors in Chinese urban and rural areas will further present the changes in our national food consumption structure, which is going to lead to the changes in needs of produce and further promote the agricultural development. (3)Farmers are investing more agricultural resources on the produce with higher value. China's traditional agricultural production with low efficiency, which is overcrowded and predominated by grain, is now gradually being transformed into the production of apple and fish which is both labor and capital- intensive with high efficiency and a rational scale. Changes in food consumption structure during the quickening urbanization, imposes a great opportunity on the agricultural industry development. We should grasp tightly and take good advantage of this opportunity so as to pursue the agricultural development.

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THE MANUFACTURE OF STARCH ENERGY GEL OF HIGH-ENERGY FOOD AND ITS PROMOTION ON ATHLETIC ABILITY

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ABSTRACT

Starch energy gel is an emerging sports food with enormous development potential and vast consumer market. However, as domestic research and production is few and the formula at foreign market is variable, the price is high. According to the requirements of the property of energy gel, storage stability and the energy value demanded etc, this paper determined the formula and applied into production, which further improved the storage stability. Animal experiment showed the average exhaustion time and death time of rats fed with energy gel was increased by 9.1% and 10.7% compared with blank group, which meant intake of energy gel before sports provided power for sports and benefited the improvement of sports ability. The experimental results of total bacterial count during storage period suggest this production completely fulfills the requirements of national food safety. The starch energy gel of this research had good performance on fast energy providing and sports ability improving, which reached the expectant effect.

1. Introduction

In recent years, the passion upsurge of sports along with the demands of special trades, such as field operation of highland, mountaineering and exploration and competitive sports, on food increases day by day, sports energy food with rapid energy supplement emerges in the market as time requires. Relevant scholars have performed thorough research on the functional component of sports nutritious food (Wenbo, 2010). Energy gel has the advantages of good taste, convenient energy supplying and fast energy release. In addition, it is loaded with multiple kinds of electrolyte and can be taken before, during and after the sports. It has been applied in some sports, such as Tour of Qinghai Lake and mountaineering and exploration etc. For now, the energy gel on sale on our domestic market is mainly imported, which is of single variety and high price. A packet weights 45 g costs about 1.5 dollars, which is a high price for Chinese athletes and sports enthusiast. Domestic scholar has made coarse starch energy gel by taking hydrolysate catalyzed by enzyme from corn starch as raw material and adding appropriate amount of electrolyte such as sodium, potassium, magnesium and chlorine etc (Miaoai, 2013). As each kinds of energy gel has different materials and formulas, of which the effect on human body is not clear, the material, formula and function of energy gel need further research. With the research, we can produce a kind or a series of energy gel which is suitable for Chinese athletes and sports enthusiast and can be put into mass production. It is significant for the development of agricultural gel. Furthermore, massive production and application using starch as material provide new method for the development of agricultural products.

2. Materials and methods

2.1. Materials

Enzymatic hydrolysate of corn starch; sodium chloride (A.R); potassium chloride (A.R); sodium citrate (A.R); citric acid (A.R); nutrient agar sephadex G-25; pancreatic enzyme and 18 healthy rats.

2.2. Methods

(1) Technological process of laboratory producing energy gel

Blending raw materials (raw materials of energy gel, purified water, sylvite, sodium salt, citrate etc)→ sealing up after 3 minutes of heating and stirring in boiled water→cooling down to room temperature→ homogenization→ sterilizing in high temperature for 10 minutes→Lay aside.

(2) Amount of energy released by the product

The component of the product which releases energy is mainly carbohydrate, so the sum total of the energy released can be figured out referencing the fact that 1g carbohydrate, oxidated in body, releases 4kcal heat energy.

(3) Measuring the energy releasing speed using in vitro digestion simulation

This paper detects the energy releasing speed using in vitro digestion simulation. The energy releasing speed depends on how fast the carbohydrate is digested. The sample can be dissolved by mixed enzyme and the digestion degree and process are determined by the measurement of reducing sugar content. Methods like in vitro digestion simulation applied here are widely applied abroad. This paper establishes the assay method of energy releasing speed which fits this product, on the basis of several foreign digestion simulation methods, as follows: Add 1g pig's pancreatic enzyme into phosphate buffer, pH=7.2, stir up and dilute to 50 mL, filtrate and for reserve.

Add a package of product into 150 mL conical flask, along with 30 mL phosphate buffer and 3 small beads, keep them in water bath of 37^{o}C and vibrate, then add 10 mL enzyme and time; take samples at 5, 10, 20, 30, 60 and 120 minutes after the adding of enzyme, the amount is 2 ml, deactivate the enzyme with few HCl solution of 1 mol/L and adjust the pH to pH=7 with NaOH solution of 0.5 mol/L, dilute to 50 ml. When the solution is diluted to a certain concentration, measure the content of reducing sugar (Fehling titrimetry). Detect the energy releasing speed of the product with the reducing sugar release rate as index. Reducing sugar release rate/%= (released reducing sugar in the hydrolyzation system at sampling time/total solids)*100%.

(4) Detecting the effect of energy gel using animal experiment

This paper investigates the effect of starch energy gel using the experiment of rat weight-bearing swimming.

A total of 18 rats were taken and randomly divided into 3 groups with 6 in each; they were marked with blank group, energy gel group and soluble starch group, respectively. Feed energy gel group with 1 ml sample liquid containing 0.2 g product; feed the blank group with distilled water of the same amount; 5 minutes later, put them into swimming bucket for weight-bearing swimming (the weight borne was 5% the rat's weight), record the exhaustion time t_1 when the rat sink and fails to come up in 5 seconds and the death time t_2; calculate the average swimming time of each group.

(5) Determination of the total bacteria count

Perform to GB 4789.2-94. Add 9g sample into 81 ml sterile normal saline, stir to mix well, choose 3 appropriate dilutions according to the polluting situation of the sample, dilute to 10 times, meanwhile absorb 1mL to smear on agar plate of standard nutrition, incubate for (48±2) h at (37±1) ^{o}C, and count. Bacterial colony review is reported choosing the dilution with bacterial colony ranging in number from 30 to 300 and multiplying dilution ratio; if colony counts of all the dilutions were under 30, the review should be reported according to the average bacterial colony with the lowest dilution multiplying dilution ratio, if colony counts of all the dilutions were above 300, report with bacterial colony count with the

highest dilution multiplying the highest dilution.

3. Results and discussions

3.1. Energy gel formula design

Research shows, during longtime sports, glucose supplement of once every 60 minutes and each time for 21.5g or, once every 30 minutes and 10.75g for each time can distinctly improve athlete's blood glucose level and effectively retard the occurrence of fatigue. For now, research has provided a suitable glucose supplement scheme: supply glucose1-5g glucose/ kg weight, 1 to 4 hours before sports; supply glucose every 30 to 60 minutes, 45-60g/h or 0.75-1g/minute during the sports; supply glucose, 0.75-1.0g/ke weight, right after the sports, first two hours and every two hours continuously, glucose supplement of 24 hours totals 9-16g/kg weight.

This paper refers to the previous researches and the requirement of Sport Nutrition, when design the formula of starch energy gel. The energy gel is initially designed as 45g per bag and each contains 20 to 30g of starch. A bag every 30 to 45 minutes fulfills the energy demand of athlete. This paper chooses enzymatic hydrolysate of starch as carbohydrate source, which contains small amount of monosaccharide supplying energy quickly after intake and polysaccharide of high polymerization degree which maintains energy supplement for a period of time (Zhencheng *et al.*, 2013; Liqun and Qi, 2011).

In addition, we added moderate electrolyte in energy gel as considering the heavy loss of sweat during sports, which contains abundant electrolyte including sodium, potassium and chlorine, among which potassium and sodium maintain body fluid homeostasis and prevent muscle fatigue, meanwhile play important role in keeping cell viability in blood, perceptibility of nerve stimulation, muscle contraction and blood clotting, chloridion keeps the balance of osmotic pressure and water of cells.

We evaluated the sweating rate of different sports and got typical average value ranging 0.8-1.4 L/h. The content of sodium was 20-80 mmol/L, potassium 4-8 mmol/L and chlorine 20-60 mmol/L. Normally, the fluid infusion is supposed to be 50%-70% the amount of sweat, which means 400mL-980mL fluid should be supplied in an hour. National standard for sports beverage published in January 1st, 2001 set limitations for the content range of electrolyte: sodium 50-900 mg/L (2.2-39.1 mmol/L), potassium 50-300 mg/L (1.3-7.7 mmol/L). This paper references the sweating quantity per hour, nationally regulated supplement amount of sodium and potassium and the interval of glucose supplement, thus finalizes the added amount of sodium as 60mg, potassium 30mg and they are added in the form of sodium chloride and potassium chloride (Yue *et al*., 2005; Wenhui and Haijing, 2013).

Besides, a certain amount of magnesium and calcium also lost during the sports, but not much and can be replenished by daily diet. Vitamin B1, B2, B12 and vitamin C can also improve athletic ability (Qun *et al*., 2011; Qian, 2013; Bo, 2013), but as the requirement quantity in energy metabolism is small, they are not considered in this subject. What's more, caffeine can also, to some extent, improve the muscle exciting degree and retard the occurrence of fatigue. Materials of this kind can be added according to actual requirement.

3.2. Calculation of the energy released by the product

The value of the energy the energy gel released is one of the indexes which evaluate the effect. This product take carbohydrates as materials thus by referencing the energy releasing amount of carbohydrates which is 1g of carbohydrates oxidated within body generates 4kcal heat, we reach the conclusion that each bag of our product which weights 45g and contains 25g of carbohydrates, provides 100kcal of energy.

3.3. Energy releasing speed of the product

The athletic ability is positively correlated with glycemic index within the body, the

higher the blood glucose content, the better the athletic ability. The main function of energy gel is fast energy supplement and starch energy gel provides energy in the form of monosaccharide which digested from enzymatic hydrolysate of starch. Energy releasing speed is an important index when evaluating the effect of energy gel.

For now, the main index to measure the energy supplement after food intake is glycemic index of which the measurement needs human body ingestion research. But acquirement of mass data is difficult. Experimental measurement becomes more difficult (Xinhua and Jing, 2010) when involves products like energy gel which is not everyday food. Research found that blood glucose reaction of food is largely related with the digestion degree of carbohydrates. If we decompose food with mixed enzyme and measure the quantity of reducing sugar after hydrolyzing we can determine the digestion degree and process, through which we can predict glycemic index of food and meanwhile tell the effect on athletes (Tianxiu, 2008). In vitro digestion simulation of this kind has been widely applied abroad, whereas in vitro determination method of digestion speed of carbohydrates is rarely reported in our country and hence the data is insufficient.

Zeng Yue et al have researched the in vitro measurement of the digestion speed of starch food. This paper adjusts several foreign in vitro digestion simulation methods and the method of Zeng Yue et al, and establishes measurement model of energy releasing speed which suits our product. This subject took pig pancreatin as hydrolase to hydrolyze energy gel; we vibrated them in 37 ^{o}C water bath and under constant temperature; we took samples at different times of the hydrolysis reaction. Measure the content of reducing sugar and investigate the digestion speed of energy gel using the releasing rate of reducing sugar. Releasing rate of reducing sugar/%= (reducing sugar quantity of the hydrolysis product at sampling time/mass of total solids)*100%.

The digestion speed of food loaded with carbohydrates is much faster than the food with protein and fat. However, the digestion speed of food with carbohydrates is slower than that of starch. In order to explain the effect of energy gel, we compared our product with ordinary corn starch, and the results are shown in figure 1.

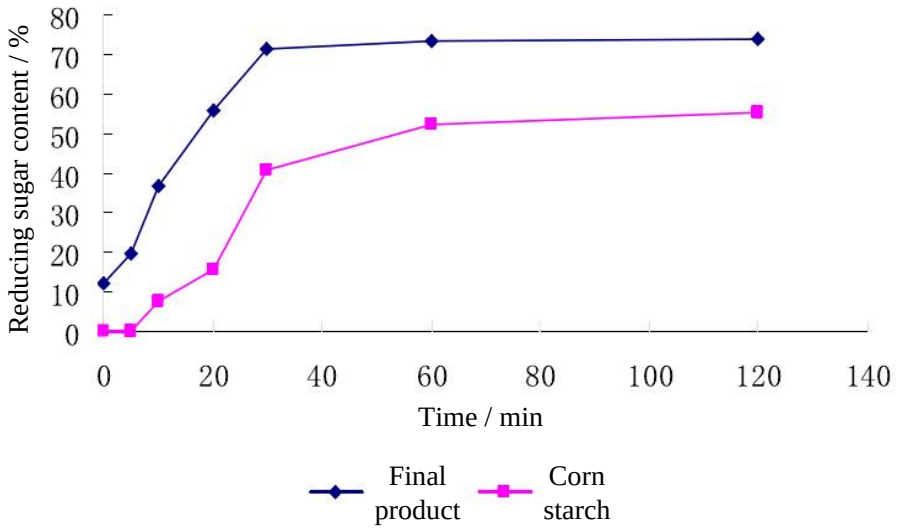

Figure 1. Comparison of energy releasing speed

From figure 1, we can see, as contains a small amount of monosaccharide, the product provides energy at the very beginning of the hydrolysis reaction. As the reaction goes on,

the reducing sugar content increases gradually, the releasing rate of which increases gradually and reaches its peak at 30 min. After that releasing rate barely changes, which means the energy supplement reaches its maximum. The result shows, energy gel achieves the energy supplement prospective and with a rapid speed. It provides energy right after the intake and can completely provide part of energy needed during the sports of 30mins as it hydrolyzes gradually under the function of body enzyme.

Meanwhile, compared with the digestion curve of original starch, the digestion speed and digestion degree of our product are much higher than ordinary starch, which means the energy releasing speed and releasing amount of our product are better than ordinary starch and reaches the expected effect.

3.4. Animal experiment evaluating the effect of the product on athletic ability

In vitro digestion experiment of the product shows that the energy speed of energy gel is fast and reaches the expected effect. But, in vivo digestion differs from in vitro digestion, thus if the product can reach the expected effect on athletic ability after ingested can not be completely stated. So, we applied rats experiment and took the weight-bearing swimming time after ingested the product as investigation index to evaluate the effect of energy gel. The results are shown in table 1.

Table 1. Experimental results of rat weight-bearing swimming

	0 (Blank)			1 (Energy gel)			2 (Soluble starch)		
	Weight/g	t_1/s	t_2/s	Weight/g	t_1/s	t_2/s	Weight/g	t_1/s	t_2/s
1	219	845	1150	256	1105	1516	186	921	1253
2	245	937	1258	230	979	1301	199	977	1282
3	207	877	1101	189	980	1321	236	891	1202
4	196	785	1099	223	876	1256	241	937	1345
5	238	953	1276	241	930	1296	227	974	1398
6	214	922	1299	246	927	1267	208	995	1363
AVG swimming time/s		886.5	1197.2		966.2	1326.2		949.2	1307.2

Note: t_1: the time rat lasted before it failed to flow in 5 seconds; t_2 is the death time

Table 1 shows, as this experiment applied random grouping, the weight of the rats is to some extent different but they all weighted between 180g to 250g. In order to reduce the experimental error, we adjusted the borne weight and made the borne weight 5% the weight of their bodies. The experimental results show, there is no necessary connection between the rat's weight and the weight-bearing swimming time, the rat that weights lighter may swim for a longer time, therefore, these experimental results won't be varied greatly by the rat's weight.

By comparison of the experimental results of all the groups, we found that the swimming exhaustion time and death time of the group which was fed with energy gel and soluble starch were better than blank group. The average swimming time and death time of the

rats fed with energy gel were improved by 9.1% and 10.7% respectively, and improved by 7.1% and 9.2% of the group fed with soluble starch which suggested a certain amount of carbohydrates before the sports provides energy for the rats during the sports and improved the athletic ability. And, those two indexes of group 1 were better than group 2, which meant energy gel prevails soluble starch in improving athletic ability. The experiment verified that the energy gel this object developed had fine performance in rapid energy supplying and athletic ability improving, which reached the expected effect.

3.5. Bacteria amounts variation of the product during storage period

Total bacterial count is an important index evaluating the safety of samples. In order to figure out if the product fulfills national food safety standard, we referred to hygienic standard of honey GB 14963 -1994 which requires total bacterial count<1000/g and hygienic standard of starch products GB 2713-1996 which requires total bacterial count<1000/g, and researched the bacterial count of the product for 3 months. The results are shown in figure 2.

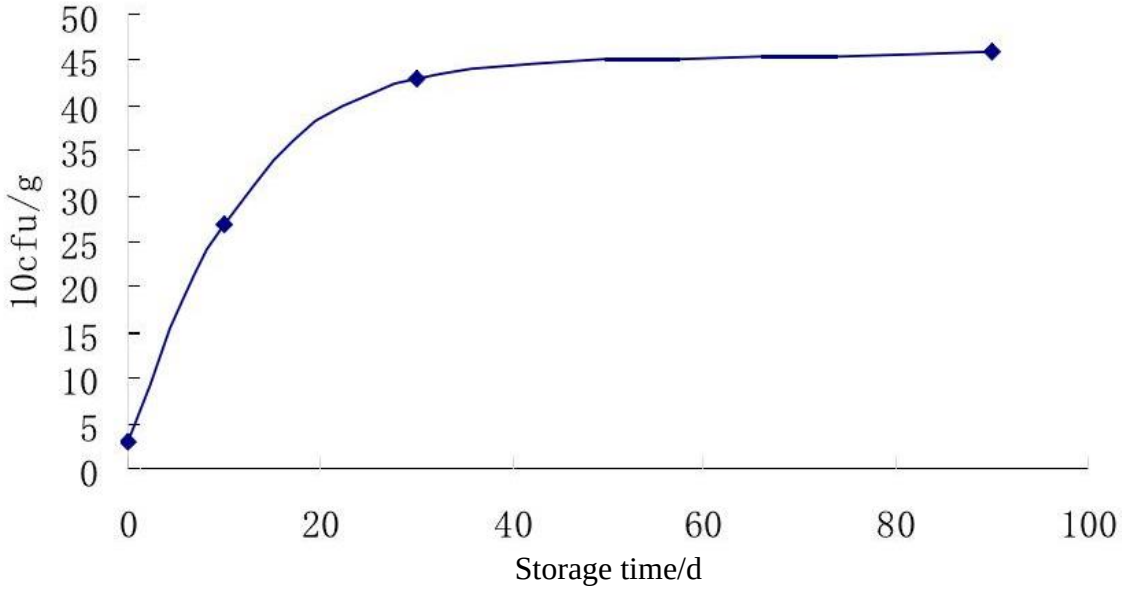

Figure 2. variation of total bacterial count during the storage period

Figure 2 shows, the total bacterial count of our product ranged between 30 to 460, and ranged between 430 to 460 when came to the 30th day of storage period. The total bacterial count was generally steady and reached national safety standard of products of the same kind.

4. Conclusions

Experimental results above show starch energy gel can distinctly improve athletic ability and it has considerable effect on several aspects such as materials, formula and function. The product suits athletes and sports enthusiast, and the production method of this paper enlightens the scale production of energy gel.

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INFLUENCE OF BOVINE COLOSTRUM ON THE IMMUNITY OF ATHLETES AND ITS MECHANISM BASED ON MOUSE TEST

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ABSTRACT
This paper aims to discuss the influence of bovine colostrum on the immunity of athletes through mouse test. ICR female rats were randomly divided into five groups: normal control group, model control group, low-dose group, medium-dose group and high-dose group. Influence of bovine colostrum on spleen index, thymus index, cellular immunity, humoral immunity, mononuclear-macrophage phagocytic function and T-lymphocyte subpopulation of immunosuppressed mice was analyzed, based on different doses. It was found that, bovine colostrum can effectively improve cellular immunity, humoral immunity, mononuclear macrophage phagocytosis and CD4+ percentage of spleen of immunosuppressed mice, hence providing reference for the possible mechanism of immunity of athletes.

1. Introduction

Multiple growth factors, lactoferrin and lactoperoxidase system in bovine colostrum can regulate immunity of the organism and intestinal flora of human and animal, and promote the growth of gastrointestinal tract and union of intestinal tissue trauma (Jun, Xiao and Nairui, 2011). The functional mechanism of bovine colostrum promoting the synthesis of protein and the bone growth of newborn animals has become one hotspot of physiological research. Hence, bovine colostrum, as the nutritional supplement, draws much attention in recent years.

Yang Qiyin et al. attempted to compound Selenium-rich G3 bacteria with bovine colostrum to form Selenium-rich bovine colostrum and construct mice immunosuppression model with cyclophosphamide. Finally, it was found that, the group with high-dose Selenium-rich bovine colostrum had the most remarkable effect, stating high-dose Selenium-rich bovine colostrum can distinctly strengthen the immunity of mice (Qiyin, Jiafang, Bingcheng, Haihua and Qing, 2010). As for the nutritional value of bovine colostrum, Wang Yang et al. analyzed the safety of bovine colostrum for reproductive development by observing the influence of bovine colostrum on the reproduction of parental rat and the growth of F1 generation newborn mice through reproduction test, and the research has representative significance (Yang, Yong, Zhaoyan, Yanli, Meng, Li, Xiaohong, Qinghai and Yumei, 2013). Yang Juan further explored the function of bovine colostrum powder in the perspective of theory of vital energy against evils and theory of visceral outward manifestation, thus offering another perspective (Juanli, 2008).

Taking ICR healthy female mice as the research object, we observed the immunomodulatory effects of bovine colostrum on the immunosuppressed mice which was injected with cyclophosphamide into

enterocoelia and probed into the positive significance of the experimental achievement on athletes.

2. Materials and methods

2.1. Materials

2.1.1. Test sample

Bovine colostrum powder (American Food Plus Plus Co., Ltd)

2.1.2. Experimental animal

A total of 200 ICR female rice offered by Laboratory Animal Centre of Medical Department with weight 18~22g and age 6~8 week were divided into four groups for experiment. Every group was randomly divided into five groups, 10 in each.

The rats were underwent organ/body weight ratio, delayed allergy, detection of antibody producing cells, experiment of spleen lymphocyte transformation induced by concanavalin A (ConA), carbon clearance test and detection of mice spleen T lymphocyte subgroup.

The experimental animals were raised in the Level II animal room of Laboratory Animal Centre of Medical Department from Beijing University at indoor temperature of (22±2) ℃ and humidity of 60% to 80%. The animals were free to drink water and take fodder.

2.1.3. Main instruments and reagents

Instruments

(1) Bio-Rad model550 microplate reader (USA), SANYOCO2 (Japan), FACSCalibur flow cytometry (FCM) (BD company).

(2) Reagents

ConA, lipopolysaccharide (LPS), methyl thiazolyl tetrazolium (MTT), agarose (from Sigma Company), cyclophosphamide (Cy) (all from Jiangsu Hengrui Medical Co., Ltd.); RPMI1640 nutrient solution (from Gibco company), fetal calf serum (from Hangzhou Sijiqing Company); Indian ink (from Beijing Xizhong Chemical Plant); sheep red blood cell (SRBC) (from Laboratory Animal Centre, Medical Department, Beijing University); anti-mouse fluorescein isothiocyte-CD4 monoclonal antibody (McAb), Phycoerythrin-CD8 (PE-CD8) McAb, Phycoerythrin-Cy5-CD3 (PE-Cy5-CD3) McAb (all from Hangzhou MultiSciences (Lianke) Biotech Co., Ltd.); other reagents are all analytical reagent.

2.2. Experimental method

2.2.1. Giving dose based on groups and method for creating model

The daily dose of bovine colostrum is recommended to be 2.0 g/ (60 kg BW), corresponding to 0.035 g/kg BW. The experiment established bovine colostrum low dose group (BL), bovine colostrum medium dose group (BM) and bovine colostrum high dose group (BH) based on 10 times, 20 times and 30 times of the recommended dose, that is, 0.35 g/kg BW, 0.70 g/kg BW and 1.05g/kg BW. The mouse was given gavage with the test sample prepared by distilled water for 4 weeks, and then detected for various indexes.

Meanwhile, normal control group (NC) and model control group (MC) were established, mice from which were all given gavage with distilled water in same volume with the dose groups. After gavage, the volume of mouse was 0.2 ml/ 10g BW.

Processing of immunosuppressed mice is as follow: except NC group, a mouse from the other groups was injected with Cy on alternate days starting from the 20th day, with 40 mg/kg BW, total for 5 times.

2.2.2. Detection of organ/body weight ratio

The mice were put to death by cervical dislocation. Spleen and thymus were taken and then removed fascia. The organs were weighted after the bloodiness in the surface of organs was absorbed by the filter paper. Then spleen index (spleen weight / body weight) and thymus index (thymus weight / body weight) were calculated.

2.2.3. Detection of functions of cellular immunity, humoral immunity, mononuclear macrophage

According to Technical Standards for Testing & Assessment of Health Food realized by Ministry of Health of the People's Republic of China in 2003, the organs were underwent experiment of T lymphocyte transformation induced by ConA, delayed allergy (metatarsus thickening method, thickening method), detection of antibody producing cells (by Jerne improved slide method) and carbon clearance test.

2.2.4. Detection of T lymphocyte subpopulation in spleen of mice

Spleen cells suspension was prepared, with 1 × 106 cells. After adding various fluorescently-labeled antibodies, the liquid was incubated away from light at room temperature for 15 min and then washed by PBS. Finally, the liquid was detected for CD3+T, CD4+T and CD8+T cell subpopulation by flow cytometry.

2.3. Statistical method

SPSS 17.0 software was used for one-way analysis of variance. The results were expressed as mean±standard deviation.

3. Results and discussions

3.1. Influence of bovine colostrum on the body weight and relative weight of immune organs of immunosuppressed mice

We conclude from table 1 that, the initial and terminal body weight of the mice had no remarkable statistical significance; compared to NC group, spleen index and thymus index of the MC group significantly declined; thymus index and spleen index of groups with different doses had no statistical difference with the MC group, but was significantly lower than the NC group.

Table 1. Influence of bovine colostrum on the body weight and relative weight of immune organs of immunosuppressed mice

Groups	Amount of animals	Initial weight (g)	Terminal weight (g)	Spleen index (mg/g)	Thymus index (mg/g)
NC	10	20.1±0.63	35.5±3.65	3.70±1.79	3.46±0.49
BL	10	20.7±0.41	31.6±0.49	2.59±0.75	1.60±0.21
BM	10	20.5±0.27	31.6±2.58	2.45±0.64	1.71±0.23
BH	10	20.5±0.27	33.3±3.08	2.05±0151	1.75±0.31
MC	10	20.3±0.78	32.5±1.47	2.04±0.51	1.57±0.24

3.2. Influence of bovine colostrum on functions of cellular immunity, humoral immunity, mononuclear macrophage

As shown in table 2, compared to the NC group, proliferation of spleen T lymphocyte, hemolytic plaque number and mononuclear macrophage phagocytosis declined apparently in MC group; T lymphocyte proliferation of BM and BH group was significantly stronger than MC group; as to hemolytic plaque number, the three dose groups were remarkablely high than MC group while the BH and BL group was much lower than NC group; phagocytic index α of the three dose groups after correction was higher than MC group and NC group.

Table 2. Influence of bovine colostrum on functions of cellular immunity, humoral immunity, mononuclear macrophage

Groups	Amount of animals	Proliferation of T lymphocyte induced by ConA (optical density difference)	Hemolytic plaque number/ 5×106 spleen cells	Phagocytic index α after correction
NC	10	0.26±0.10	2644±294	5.631±0.970
BL	10	0.17±0.04	1856±246	6.997±0.601
BM	10	0.22±0.05	2234±297	7.336±0.871
BH	10	0.22±0.05	1666±207	6.622±0.675
MC	10	0.08±0.01	1230±239	4.564±0.772

3.3. Influence of bovine colostrum on the spleen T lymphocyte subpopulation of immunosuppressed mice

As shown in table 3, compared to NC group, CD4+T cells ratio of MC group declined obviously, while CD4+T cells ratio and CD8+ T cells ratio of MC group had no statistical significance; CT4+T cells of BM group was much higher than MC group and NC group.

Table 3. Influence of bovine colostrum on the spleen T lymphocyte subpopulation of immunosuppressed mice

Groups	Amount of animals	CD3+(%)	CD4+(%)	CD8+(%)
NC	10	42.35±10.34	28.37±4.16294	9.70±5.31
BL	10	44.37±8.70	33.48±11.39	5.55±1.66
BM	10	47.48±10.50	38.32±5.59	3.90±1.34
BH	10	38.52±9.81	26.17±5.19	9.03±3.30
MC	10	25.57±6.07	19.09±8.86	5.90±2.89

3.4. Discussions

Body's immune system (Meng, Ya, Kun and Xin, 2013) is the network system composed of immune organs, immune cells and immune molecule, deficiency or abnormity of which can cause incomplete or disorder immunity, hence, decreasing or losing it. Immune response can be divided into specific immune response and non-specific immune response, of which, specific immune response can be divided into cellular immunity and humoral immunity (Jianhua, 2014). Macrophage almost involves in all immunoreaction, with functions including decomposing various foreign matters and then interacting with each other, stimulating and promoting the immunological competence, meanwhile, it acts asdamaging tumor cells and effector cells of microorganism, and regulator for immune response (Dan, Yana and Huaye, 2011). Experiments both at home and abroad prove that, bovine colostrum can strengthen cellular immunity, humoral immunity and phagocytosis of peritoneal macrophag. Experiment of T lymphocyte proliferation induced by ConA reflects the cell immunity levels, hemolytic plaque assay reflects the cell secretion function of antibody, that is, humoral immune levels, and carbon clearance test reflects the phagocytosis of peritoneal macrophag. The experiment results hints that, bovine colostrum can improve the proliferation of spleen T lymphocyte, cell secretion function of antibody as well as phagocytic activity of mononuclear macrophage.

Thymus is the central immune organ differentiated and matured from T lymphocyte, and spleen is the most important peripheral immune organ in the body, and the important place for settle down of T and B lymphocyte

and forming immune response after stimulated by antigen. Both are closely correlated to cellular immunity and humoral immunity of the organism (Miaomiao and Jibo, 2010). In the experiment, bovine colostrum is not able to recover the quality of mice' immune organs inhibited by cyclophosphamide. Therefore, we speculate two possibilities: the immune organs have not recovered since the supplement time of bovine colostrum is too short; the immunosuppression of cyclophosphamide on spleen and thymus is so severe that cause irreversible recovery. It needs to be further discussed. Spleen T lymphocyte subpopulation levels, especially CD4+T cell subpopulation and CD+/CD8+ are the important index reflecting the situation of environment within immune system, and also one of the important signs for the severity and prognosis of disease. Our experiment demonstrates that, bovine colostrum can enhance the percentage of CD4+T cells of immunosuppressed mice, indicating that bovine colostrum may realize its immunity enhancement function through strengthening the function of CD4+T cells.

For training, athletes, sometimes, have to do large amount of exercises in high temperature environment. High temperature is a strong heat stress for human body. As the metabolism increases, heat produces more, and the body temperature rises, in turn, speed up the metabolism of organism and the decomposition of tissue protein. As a result, athletes sweat a lot, leading to the lack of water and salt, often with negative nitrogen balance (Xiaoqin, Yunfeng and Yanan, 2013). In the high temperature and humidity environment, people who do manual labor or sports tend to suffer from sunstroke. Researchers hold that, bovine colostrum may protect gastrointestinal permeability increase caused by high heat through affecting the tightness of cell connection in rectum by its active components. It hints that, taking bovine colostrum in the condition of high temperature and humidity can prevent from excessive high body temperature in heat stress and regulate heat balance.

Based on the effect of mice experiment, it is found that, bovine colostrum not only can offer passive immune protection through multiple immune factors, enhance the immunity of people with low immunity, but also can promote immune activity of lymphocyte, damage tumor cells and effector cells of some microorganism; accelerate the normal growth of cells, tissue recovery and trauma healing. Therefore, it is believed that, bovine colostrum is beneficial for promoting gastrointestinal motility and digestive absorption, enhancing the synthesis of protein and tissue growth, improving bioavailability of mineral substance, repairing the injured muscle and connective tissue, protecting moving joints, and finally enhances sports performance. Besides significantly boost sports performance, continuous taking of bovine colostrum, as well as strengthen buffer ability. Bovine colostrum, as the perfect combination (Xiaolei, 2013) of natural immune factors and growth factors, is known by more and more people for its value in use. Notably, its rich nutrition and value for improving immunity have been praised highly by the experts and consumers.

4. Conclusions

All in all, health care function of nutrition of bovine colostrum is attached more importance day by day. Through a large amount of researches, the nutrition experts point out that, bovine colostrum is of high nutritional value, and its main functional component IgG which plays important function in passive immunity factor is 200 times of ordinary cow milk, and 50~100 times of human colostrum. Meanwhile, a wealth of relative researches on the functions of bovine colostrum provides theoretical basis for it applied as sport nutritional food. Bovine colostrum possesses functional factors that can improve sport ability or health condition, without any toxic and side effect; therefore, it is of broad prospect in the development of motor function food. However, the detailed mechanism of immunoregulation of bovine colostrum still need to be further

studied, such as detecting its influence on cellular element secretion, antibody generation, signal transduction pathway by applying molecular immunology and cytobiology, thereby offering theoretical basis for the further development of bovine colostrum industry. To sum up, as the research on bovine colostrum deepens, we realize the importance of bovine colostrum on moving body, and believe that the application development of bovine colostrum is bond to be boost in sports field, and contribute to the sport career of human.

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INFLUENCE OF ENGLISH FOOD ADVERTISEMENTS BASED ON PHONOLOGICAL AMBIGUITY AND SEMANTIC VAGUENESS AND WAYS TO TRANSLATE INTO CHINESE

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ABSTRACT
Vague language, belonging to linguistic phenomenon, is quite common in human languages. Advertising languages depend on vagueness to establish product images in order to promote sales and attract consumers to purchase. Vague languages meet needs of advertising languages for its conciseness and informativeness, doing well in advertising. On the basis of example analysis, this paper analyzed vague language application in English food advertisements based on phonological ambiguity and semantic vagueness. Besides, the ways to translate English food advertisements into Chinese was also mentioned in this paper. Through the pragmatic functions of vague languages in English advertisements, it was informed that advertisers should adopt vague languages wisely in English advertisements to interest consumers.

1. Introduction

Food advertising competitions are more and more intense in this information world. With the development of modern advertising industry, many English advertisements turn into the behavior "commerce-aesthetic appreciation" from signal commercial activities. By this transfer, advertisements can immediately catch consumers' eyes, influence consumer attitudes, and even change human's life styles. Then consumers no longer simply accept commodities; instead, accepting advertisement information is also an experience of beauty appreciation which can raise people's purchasing desire (Xiaoyan, 2011). Charming advertisements generally make efforts in languages and sentence structures, which leaves people rich and meaningful aesthetic enjoyments. Successes of many English food advertisements are due to vague languages (Xin, 2012).

The art of advertising languages impresses the public as an art work for appreciation and also a product image full of art appeal. Beauties involving artistic conception, emotion and color created by advertising language, somehow are directly or indirectly connected to the delivery of product information. It is necessary to convey information concisely and accurately with exact words, but vague languages sometimes are more convenient for information delivery and interpersonal communication. Besides, conciseness means to express most information with fewest and most accurate words (Na, 2009). Vague language, without certain definition, is exactly what advertising languages require. Actually, vagueness is the natural phenomenon of human language; on the other hand, it is the character of English business advertisements. Therefore, linguistic hedges, a key means for vagueness, are widely applied in English business advertisements.

2. Materials and Methods

2.1. Vague languages and concepts of advertising English

① Vague language

"Vague language" was first born in the late 20th century. In 1965, Chad, American scientist of electrical engineering and computer came upon fuzzy theory in his paper Fuzzy Sets, followed by the emergence of fuzzing linguistics. And American philosopher Black wrote in Language and philosophy that "language vagueness lies in the uncertain boundary of its limited applying range". Professor Tieping Wu is the pioneer in vague language study. He holds the view that fuzzy conception means the non-extensive conceptions words expressed (Shimeng, 2011; Shuang, 2012).

Ambiguity is translated as the uncertainty of what words mean or refer to; to be specific; it is the uncertain relation between a symbol and what the symbol refers to. In fact, the language vagueness can be described as "the uncertainty of references of words". In broad sense, vague language includes transitional expressions which are indistinguishable in generic scope or state, as well as phonetic and grammatical phenomenon in those transitional expressions, namely fuzzy speech and fuzzy grammar (Xin, 2012).

② Advertising English

"Advertisement" originated from "Adverter" in Latin, meaning a way to catch the public's attention and guide human beings.

As a means of information communication, advertising language is characterized by conciseness, succinctness, implicitness, and liveliness. Besides, it is full of emotions and appeals. Also, advertisements promote information full of national characters and artistry with authenticity and attractiveness, illuminating consumers with certain purpose. Only master the features of advertisements can consumers understand and take in advertising deeply (Shijin, 2012; Junfei, 2010).

The authenticity of advertisements that carry information for promotion requires convincing expressions, but this is not in conflict with the application of vague language. Oral and written communications are flooded with vague languages since vagueness is a kind of language nature. Thus vagueness is inevitable and not all vague words must be replaced with accurate ones. While advertising is different from both written language and oral language, it satisfies needs of implicitness and appeal in advertising language.

2.2. Translation methods of advertising English

Advertising English is translated flexibly and freely. Only in few words, the translation adopts various rhetoric devices to attract and surprise consumers in an interest, vivid and concise way. The translation of advertising language can use translation methods proposed by Qinghua Feng for reference. Qinghua Feng puts forward three methods of translating figures of speech, literal approach, free approach and complementary approach (Yaqin, 2010; Ran, 2011). Strategies should be properest when translating advertising language to express original meanings in highest possible. Thus target texts is most likely to have the sound, form and meaning in source texts after translation. Reference to table 1.

Table 1. Three translation methods and their applications

Literal approach	Free approach	Complementary approach
Literal approach is suitable for advertisements having equivalent functions when translated. By this means, original sentence structures and rhetoric devices should be maintained. It is aimed to represent original ideas with closest and most natural equivalences without changing the original form, context and style.	Do some process if source texts can not be reproduced. English differs from Chinese in grammar, speech, linguistic form and even cultural background, so sometimes literal translation makes target text hard to comprehend. In this case, it is necessary to take free approach that enables target texts to appear naturally, appropriate and readable. Even without similar rhetoric, process is very important for effective expression.	Make efforts for advertising languages that can not be translated. For one thing, for vital information, it is advised to change genitive, make emphasis and add foot note. For another thing, omission is acceptable for insignificant figures of speech. Only short explanation is demanded to help those who do not get the original ideas.

3. Results and Discussions

3.1. Phonological Ambiguity

(1) Fresh up with 7-up.

Target slogan: 君饮七喜，提神醒意。

Above is the advertisement with "seven-up", in whose name "up" refers to "come up with" and "lively up". At the same time, the slogan sounds sonorous and rigoroso with the obvious trademark "seven-up". That explains the popularity of "seven-up" in western markets. When translated into Chinese, four - character structure "君饮七喜，提神醒意" is a perfect complementary. "Xi" and "Yi" in Chinese are with good rhyme while four - character structure is almost accord with the source text. Original ideas and styles are well presented via processing.

(2) Great time, Great taste.(McDonald's)

Target slogan: 美好时光，美味共享。

This advertisement with McDonald's adopts alliteration and repeated figures of speech to create a concise and brief effect. Literal translated text meets demands of Chinese advertisements, which makes it a physical and spiritual comfort when having fast-food with such beautiful slogan.

Phonological ambiguity is the vague speech compatibility existing in phonology, the carrier of semantics. Such a phenomenon mainly performs in phoneme and speech flow, and is often seen as homophone and pun. What phonological ambiguity brings are pleasing languages and ideal sound effect by which advertising languages enhance their performance and appeal. Besides deep impression, lingering charm of advertising English is presented as well.

3.2. Semantic Vagueness

(3)Scots Whisky uncommonly smooth.

Target text: 苏格兰威士忌，口感滋润非同凡响。

Tasty wine is indispensable for delicacy enjoyment. For instance, with four catchy words, the above advertisement of wine makes consumers associate with wine's great flavor and taste. If translated into Chinese, free approach here matches. Use four - character structure skillfully, the advertisement is more charming and impressive with a cadence, which is just like icing on the cake.

(4) Dove Chocolate, Silky Smooth Milk.

Target slogan: 牛奶香浓，丝般感受。

Smooth again in this slogan displays the chocolate's strong flavor and silky emphasizes its delectable taste. Reading the slogan causes the urge to have a bite. It is also proposed to

take processed free approach to refine the target slogan.

The born of semantic vagueness follows the development of language, and differs day by day. Some words are born with vagueness, such as adverb, verb and numeral, and adjective in particular. What makes advertising English different is the quantitative adoption of evaluative and positive adjectives. With more derivative ideas, the meanings of adjective are more uncertain.

Vague language expresses in a concise, general and flexible way, improving the efficiency and accuracy. Also, such implicated and polite expressions are filled with fancy and aesthetic influence (Fan, Bin and Xiaoling, 2014). So advertisers use vague languages to beautify advertising, hoping to incite consumers to purchase in an advertising environment. Appropriately utilized, vague language will be a healthy force based on facts for sales promotion.

4. Conclusions

Vague language floods in different languages in every corner. Since ancient time, whether in English or Chinese, vague language appears in descriptions of delicacies. Facts indicate that natural language is born with vagueness that applied widely in English advertisements. Vague languages convey ideas via vagueness itself, while uncertainties are presented in a unapparent way. Interestingly, the hazy beauty of vague language enhances the artistic appeal of advertisement to advance expressions, resulting in nimble and rich sentence structures with elegant and unique words (Jinnan, 2008). To have more consumers, advertisers should use vague languages wisely and reasonably. As for consumers, they can beat time with delicious foods while enjoy the comfort in smell, vision and hearing that created by advertising language.

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MARKET STRUCTURE AND CASE ANALYSIS OF SPORT NUTRIENT FOOD INDUSTRY

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ABSTRACT
This research aims to explore the current development situation and prospect of sport nutrient food industry in our country, thereby providing reference for relative department and enterprise and promoting the development of the industry. Taking the development of sport nutrient food industry in our country as research object and CPT company as individual case, this paper objectively and detailed analyzed and summarize the demand, supply and structure of market and development strategy of sport nutrient food industry in our country by reference data, case analysis, field survey and comparative analysis, and finally suggestions were given accordingly.

1. Introduction

As national economy develops rapidly, our country has stepped from survival stage into development stage overall and at the same time, the consumption structure and method changes as well. Health is attached more and more attention. Therefore, extensive mass fitness programs become active day by day and the groups that participate physical exercise become more and more. It not only provides development opportunity but also proposes new challenge for the sport food industry in our country (Zenghou, 2013). Sport nutrient food industry turns from niche market to mass market, acquiring to study demand, supply, market position, market structure of the whole industry and enterprise behavior to adopt to the change of the market changes. Through the exploration on sport nutrient food development, Deng Qixian found that, sport nutrient food showed development characteristics of popularization and gradually improving standard, and its development prospect was broad as national economy is improving (Qixian, 2011). In the report of sport nutrient food industry development, Deng Suhe et al (Suhe, Muyi, Zeyi and Yunbo, 2011). Stated the policy environment and development prospect of sport nutrient industry and pointed out that, the current national policy, economic development and industry environment were all beneficial for the development of sport nutrient industry and the expansion of consumption groups would expand the market of sport nutrient. In addition, Sun Qingli et al (Qingli and Guoyu, 2011) analyzed in the perspective of coordination of technology motivation, market motivation and policy guidance, cleared out the relationship between industry development and industry development means, and proposed the coordinating measurements of technology, market and policy for promoting food industry development means combined with the stage characteristics and realistic basic conditions. Based on the research basis mentioned above, this paper analyzed multiple factors such as demand, supply, structure and competition of sport nutrient food industry,

aiming to promote the development of sport nutrient food industry and provide valuable suggestions for relative departments and enterprises.

2. Materials and methods

2.1. Research object

The development of sport nutrient food industry in our country was regarded as research object, and Competitor Company was taken as cases for analysis. First, the development situation and prospect of sport nutrient food industry was summarized. Secondary, this study emphatically analyzed the market demand, supply situation and market structure of sport nutrient food industry, and the enterprise behaviors were analyzed taking CPT Company as individual case. Finally, based on the above research, the basic ideas of sport nutrient food industry development strategy in the future were proposed.

2.2. Reference data method

A large amount of papers and data for sport nutrient food industry development at home and abroad were looked up through library, Google Books, China Journal Network, Wanfang database, EBSCO Sport Information Database, Google Scholar, etc., thereby accumulating rich references for the research and writing of this paper. Therefore, the research and writing of this paper becomes more reliable, realistic and practical.

2.3.Case analysis method and field investigation

The research took the representative enterprise in that industry — Beijing CPT Company as individual case, and then made further investigation on the whole industry to connect theory with practice. As a result, the argument becomes more reasonable and the suggestion becomes more specific and prospective.

2.4. Comparative analysis method

This paper objectively analyzed the formation and development of sport nutrient food industry in our country and emphatically analyzed marketing, developing, standard establishment and industry monitoring with comparative analysis, thereby providing certain reference for the healthy and standard development for sport nutrient food industry.

3. Results and discussions

3.1. General situation and development prospect of sport nutrient food industry

The development and application of sport nutrient product in our country originates from competitive sports. Although it started late compared with western countries, its developing speed is rapid. Over the recent thirty years, the supplement of sport nutrient has risen to the same important position as diet improvement. Nutrient supplements, sport nutritional enhancers and human body movement regulators are three kinds of sport nourishment in our country. Market existence has certain periodicity. The market expenditure of Olympic Games and National Games are relative high. CPT, Waite, Multipower, MET-Rx, EAS, etc. are all common sport brands in the market, accounting for more than 80% of share (Zenghou, 2013; Zhencheng, Mingwei, Xiaojun, Yan, Ruifen and Yuanyuan, 2012).

Since 2000, fitness industry develops rapidly. Sport nutrient product grows rapidly in national market. In 2010, food growth rate of that industry close to 20% and is supposed to be in an increasing trend after 5 years. In addition, making a general survey of the policy environment of sport nutrient industry in our country, we find that, the nation not only strengthens food safety monitoring but also positively encourages domestic demand development and sport development, and provides conditions from aspects of politics, economic development policy and industry environment. It is believed that that industry will reach the scale of more than 17 billion in 2015 (Suhe, Muyi, Zeyi and Yunbo, 2011). The

users of sport nutrient food has not restricted to professional athlete yet, but expanded to healthy amateur, sports enthusiast and pursuer for healthy living style, which has a broad market prospect (Wenbo, 2010).

3.2. Market demand and supply of sport nutrient food industry in our country

Interdependency and interaction is the relationship between demand and supply of sport nutrient food industry. Demand is the realization premise of supply while supply is the realization condition of demand. The demand of sport nutrient food refers to people's demand quantity for sport nutrient food, including effective demand and potential demand. Effective demand refers to demand that has purchasing desire, payment capacity and can be transformed to practical purchasing behavior; potential demand refers to objective demand on sport nutrient food, including the demand that has purchasing desire but is temporarily inhibited under the influence of payment capacity and other factors, that is, the demand that temporarily has no purchasing desire.

As shown in data, from 2005 to 2010, the sales amount of sport nutrient food industry of our country increased from 0.112 billion yuan to 0.222 billion yuan, with an increase rate of 98%; from 2010 to 2015, the sport nutrient food industry is expected to exceed 10% of compound growth rate, which has a huge market potential. However, the market scale is relatively small. The reasons include economic factors and noneconomic factors. After further division, the factors are as follows:

(1) economic factors that affect market demand: economic development and income level; changes of citizen consumption structure (including diet structure); preference of consumer; price in sport nutrient food and price of relative products; influence of sport industry structure.

(2) Noneconomic factors that affect market demand: influence of the healthy condition of different groups on sport nutrient food demand; influence of population participates sports on the demand of sport nutrient food; influence of sport nutrient food knowledge of health groups on sport nutrient food demand; influence of standard and regulations of sport nutrient food on market demand; influence of governmental policy and public opinion on sport nutrient food demand.

Supple is the realization condition of supply and supply capacity is the realization degree that affects demand. Till 2010, the sales amount of sport nutrient food in our country reached 0.222 billion yuan, with an obvious increase. Influence on market supply mainly includes cost and price, marketing channel, marketing means and developing input. Supply quantity and price shows positive relationship, while they shows negative relationship when other conditions do not change. Drug store and brand monopolized shop that are relatively authoritative and professional are the main purchasing channel for sport nutrient food. With the constant development of technology, new-emerging channels such as TV shopping and e-commerce expand. In addition, the development of sport nutrient food affects capacity for scientific research and research input. For now, sport food industry exists problems including low capacity for scientific research, insufficient research input, low level, severe homogenization and insufficient effective supply of product.

3.3. Market structure of sport nutrient food industry in our country

Market concentration refers to market share of few biggest manufacturers in some specific market. At present, sport nutrient food market tends to have a market structure of oligopoly. In the market of sport nutrient food industry, CPT, UN, MET-Rx is the most common brands, accounting for more than 80% market share. According to statistics, CPT and UN account for nearly 59% of sales amount in 2010. CPT is in the leading place, with a share of 42.6% while UN is secondary with a share of 16%. In addition, protein powder from sport

nutrient food is the most popular, with a share of 85.1%. Gymnasium and weight-loss clubs are the main sales channels of sport nutrient food, accounting for more than 90%. With the development and maturity of healthy consumption market, its concentration is further improving. It is believed that, the sales amount of sport nutrient food keeps a trend of upward, and will achieve 0.365 billion yuan till 2015, as shown in table 1 and 2:

Table 1. Expected sales growth rate of sport nutrient food from 2010 to 2015 unit: %

Time	2010-15 compound growth rate	2010/15 total
Growth rate	10.4	64.2

Data source: Euromonitor International Trade Association, Trade Conference, Enterprise Research, Trade Investigation, Trade Source

Table 2. Expected sales amount of sport nutrient food from 2010 to 2015 Unit: million yuan

Time	2010	2011	2012	2013	2014	2015
Sales amount	222.4	251.1	280.5	309.7	338.2	365.2

Data source: Euromonitor International Trade Association, Trade Conference, Enterprise Research, Trade Investigation, Trade Source

Entry Barrier refers to some bad factors that make new entered enterprises have no advantage to compete with the existing enterprises and even have no benefits in some industry. For sport nutrient food industry in our country, entry barrier includes capital requirement barrier, technology barrier and policy and regulation barrier. Sport nutrient food industry belongs to technology-intensive industry, therefore, needs certain production condition. In that field, CPT Company places the leading position in the world with its advantage of patented technology. In addition, law and relative system require high for food safety, which has certain influence on the entry of sport nutrient food market.

3.4. Behavior of sport nutrient food enterprise in our country - take CPT as example

CPT company, founded in 1988, is the first professional sport nutrient food enterprise integrating product development, production and sales. In the beginning, external environment faces three problems, that is, utilization of stimulant, blank of sport nutrient food at home and the lack of scientificity of training of athlete. The problems mentioned above should be solved by domestic, scientific and effective sport nutrient food, thereby providing food chance for the establishment and development of CPT Company. The detail development situation is shown in table 3:

Table 3. Development situation of CPT company

Development characteristics	Specific performance
Join Olympics	CPT company forms product line composed of ten products, covering the sport nutrient for professional athlete during training and competition and filling the blank of sport nutrient product at home. In 2000, it provided nutrient food for athletes in Sydney Olympic to increase its fame; in 2004, it provided comprehensive sport nutrient food security for Chinese athletes in Athens Olympics; in 2008, it was one of the suppliers of sport nutrient food in Beijing Olympics.
Combination of study and research	In 1999, Body Branch of National General Administration of Sport and leaders, experts from sport nutrient food field and director of CPT company held the seminar related to the development of sport nutrient food industry at home to clear the developing direction of that industry; in addition, besides multiple colleges and universities and scientific research organization, CPT company cooperates with National General Administration of Sport and national scientific research department. It shoulders many projects in national and provincial level and has got relative achievement; in 2006, it invested the establishment of sport nutrient industry base which is the important symbol for sport nutrient food industry walking towards industrial direction.
Focus on quantity and pass relative certification	In 2002, CPT company passed IS09001 quantity certification and output certification; in 2004, it passed GMT certification and HACCP; in 2009, the State Administration of Quality Supervision Inspection in (and) Quarantine and Standardization Administration of China released PRC National Standard QB/r24154-2009 sport nutrient food general rule. Among it, CPT company is the first drafter of formulation of industry standard and state standard for sport nutrient food in country.
Expand sport nutrient food for public physical training	Entering 21 century, CPT company began to produce mass-market product in a large scale and pitch the main object on healthy amateur, students, middle aged and elderly people and all pursuer for sport health. In 2005, the first sport nutrient exclusive shop; in 2007, it signed a contract with Olympic champion as the brand spokesman and performed product development and production against athletes of middle school; in 2010, it entered the market in a large scale. Its plan is to open 1000 exclusive shops and comprehensively march towards mass market.

As CPT develops, domestic sport nutrient food industry develops rapidly as well. Till 2004, sport nutrient food market has formed scale of 1 to 1.5 billion yuan. In the same year, International Sport Nutrient Food High-Level Forum held and first proposed sport nutrient food, which promotes the healthy development of sport nutrient food industry of our country in aspects of standard formulation and technology development of sport nutrient food industry. Afterwards, market of sport nutrient food is constantly expanding and the industry is constantly mature. Till 2008, total sales amount of sport nutrient food industry market including sport drink and energy bar has closed to 5 billion yuan. Micro motion group gradually accounts the main body. People have basically accepted the concept of combining nutrient and sport, and use nutrient food for the purpose of improving health (Zeyi, 2011).

4. Conclusions

National economy develops rapidly, stepping form survival stage into developing stage. Health is attached more and more importance. Sport nutrient food has not limited to sport competition but gradually forms dispersed and professional market position pattern. However, the whole position of the current industry has still focused on niche market. In order to expand market, the target market position turns from professional athlete to mass consumption groups, so as to achieve purpose of promoting body growth during sport. Technology development determines whether enterprise can be successful and whether it has competing capacity (Dezhang, Jianbo and Huiyong, 2012). Technology of sport nutrient food industry in our country has possessed advanced level in some aspects through efforts. But most enterprises have had no core technology yet. Therefore, the developments of that industry need high-level technology and production equipment as support. At the same time, enterprise development should establish clear brand consciousness to expand its brand influence. In addition, government and industry association should play its function to create good external environment for the development of sport nutrient food industry (Zhenya, 2012; Lingguang, 2011).

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CHARACTERS OF ENGLISH FOOD ADVERTISING LANGUAGE AND ITS TRANSLATING INFLUENCE

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ABSTRACT
The purpose of this research is to analyze characters of English Food Advertising Language and its translating influence. With four different translation skills, representative English food advertising languages that selected randomly are analyzed. The results show that translations of English food advertisement and skills in wording have great impact on customers' impressions and foods' sales.

1. Introduction

As the growth of global economy, communications between nations and between regions have been deepened. Advertisements, especially food advertisements closely related to daily life and receiving much attention, play a more and more vital role as media for communication. Because of individual features, food advertisements should take the followings into consideration: advertisement orientation, originality and public acceptance. To make advertised foods as appetizing as possible, the key is the presentation of food taste and visual sense. Translations of food advertising language should put the respect of foreign traditions in the first position since targets are foreigners. Besides, products' distinguishing features will be the core to make foreigners eager to have a try.

Xin Ye analyzed the application of vague language in English food advertisements based on fuzzy phonetics, semantic vagueness, fuzzy rhetoric and syntactic ambiguity. And she aimed to investigate English-Chinese translation methods to attract more customers. Having analyzed English advertisements of famous brands in home and abroad (Xin, 2012), Jing Tian concluded that vague language satisfied customers' requirements of beauty, low-price and convenience, met communicative features of advertising media and was accord with western values, social norms and advertising communications (Yumin and Jing, 2014). Xia Peng, on the other hand, did qualitative and quantitative study on vocabularies and language characters in commodity advertisements, technical equipment advertisements, and service advertisements from database. She identified similarities and differences of advertising English in the mentioned kinds of advertisements, and explained commonness as well as individuality of advertising English according to language's meanings, styles and effects (Xia, 2013).

This paper adopted literal approach, free approach, borrowing approach and complementary approach to analyze characters of English food advertisements and the translating influence of well-known food advertisements. Through this paper, the goal is to better understand English food advertising language and cross-cultural communication.

2. Materials and methods

2.1. General advertising language (table 1)

Table 1. Resources of advertising slogans

	Brands	Slogans
1	Wm. Wrigley Jr.	Bite it off, love at first bite
2	7-up	Fresh up with 7-up
3	McDonald' s	Great time, great taste
4	Best pineapple cake in Taiwan	Special taste, Special you
5	Froot Loops	Follow your nose
6	England N·N Foods	Enjoy great popularity
7	England N·N Foods	What for next century? Try N·N Foods
8	M&M's	Only dissolve it on the mouth, does not dissolve on hands
9	DOVE	Sweet-smelling milk as silk tasting

2.2. Translation methods and features of English advertisements (table 2)

Table 2. Translation methods and features of English advertisements

Methods	Features
Literal approach	For foods treasuring taste and quality, literal translation means presenting what products really are without misleading customers. Meanwhile, target language should keep simple and concise (Baoying, 2012).
Free approach	In some cases, literal approach makes target advertising language hard to understand, while free approach enables advertisements to be appropriate and readable (Hongmei, 2012).
Borrowing approach	Use proverbs and common sayings or well-known sayings from target languages to replace those from source languages, which are borrowing approach. This method performs original meanings vividly and also makes target language close to life and easy to be accepted, which avoids

	problems caused by literal approach (Huaxian, 2011).
complementary approach	As for some untranslatable advertising words, complementary approach aims to make up and express original meanings as full as possible. Absent detailed information in source text should be explained in target text to help readers comprehend and fill information shortages resulting from the absence of equivalent words.

3. Results and discussions

The objective of translation lies in exhibiting products in a vivid way and without any reservation within limited words and length. Therefore, what matters most is the translation method which if used wisely, drives consumers to purchase advertised products after acquainting and remembering the products. From what discussed above, it can be noted that perfect translation methods along with catchy languages make a big difference, which is performed in table 3.

Table 3. Translating influence of English advertisements

Methods	Slogans	Influences
Literal approach	1. Great time, Great taste.(McDonald's) Target slogan: 美好时光，美味共享。 2. The taste is great. (Nestle) Target slogan: 味道好极了。	Both slogans take literal translation, but the first one maintains the antithesis in English and satisfies the rhyme in Chinese. (Yanfang, 2014) This combination of material and spiritual comfort is hard for consumers to resist.
Free approach	Seven up Target name: 七喜	"Seven" refers to "lucky and peace" in English culture while "up" means "higher lever", thus "七喜" is exactly what "seven up" expresses. Why not "七上"? That is to avoid the misleading of the Chinese saying "butterflies in my stomach".
Borrowing approach	百闻不如一尝 (a cereal and foodstuffs import and export corporation)	This original advertisement slogan borrows the Chinese saying "One look is worth a thousand words", telling us foods' "taste" matters more than "smell" and "vision". And the target slogan borrows the English saying "Seeing

	译文: Tasting is believing	believes" rather than being translated as a long sentence. With this approach, the concise target slogan is easy to memorize and has the same effect as the source slogan.
Complementary approach	Spoil yourself and not your figure. (ice cream) Target slogan: 尽情大吃，不增体重。	Polysemy and pun are applied in this slogan, which may easily cause some misunderstanding for consumers with low English level. "Spoil oneself" is about "enjoy oneself", yet "spoil one's figure" refers to "weight gain". The use of pun dismisses the worrying of putting on weight by eating ice cream and consumers are more willing to accept the product. However, no equivalent words exist in Chinese. So four - character here, as a complementary approach, expresses in a more natural and effective way.

Slogan is the language used in advertising (Feng, 2013). English food advertisement enjoys its uniqueness and shares the commonness with general advertisements. When coming to sound, food advertisement intends to raise consumers' interest and gain trust by sweet sound, harmonious tone and cadence. The life-style of food advertisement makes it more kind, feeling like family-talks. The homophone of "bite it off" and "love at first bite" of Wm. Wrigley Jr. is "hit it off" and "love at first sight". This homophone hits the public for the familiarity and the deep impression of its lovely meaning. With pun and rhyme, the advertisement sounds sonorous an in general, the language of food slogan is popular and easily understood with words' denotative meanings and depictive and vague adjectives. For example, sensory verbs can enhance foods' reliability, such as "great time, great taste" and "follow your nose", resulting in association of delicacies and desire to purchase. The adjective "great" is a vague word. How is great? Opinions differ among different people. But such a word does whet consumers' appetites. Verbs in English advertisements can be regarded as subjective uses of vague words. Follow you nose and follow your heart; if you want to try, just have a try.

In general, the language of food slogan is popular and easily understood with words' denotative meanings and depictive and vague adjectives. For example, sensory verbs can enhance foods' reliability, such as "great time, great taste" and "follow your nose", resulting in association of delicacies and desire to purchase. The adjective "great" is a vague word. How is great? (Yunqin, 2010) Opinions differ among different people. But such a word does whet consumers' appetites. Verbs in English advertisements can be regarded as subjective uses of vague words. Follow you nose and follow your heart; if you want to try, just have a try.

Slogans, English food slogans included, should be short and concise because they should be clear and certain, attractive and quickly-memorized. Moreover, various syntactical structures are applied skillfully in English food slogans, mainly elliptical sentence and simple sentence characterized by quick catch and memory of information. Apart from

that, sentences in advertisements are also short and simple. For instance, "enjoy great popularity" with England N·N Food Corporation indicates that the product meets with great favor. And the saying gives consumers the sense of trust. Rhetorical questions show up in English advertising as well, and "What for next century? Try N·N foods." is a perfect example. "Next century" informs consumers that the product's popularity lasts for a long time, which evokes the desire to purchase.What exquisite words for English food advertisements is rhetoric device for exquisite words. (Xiaokun, 2011) Rhetoric device, often seen by metaphor or simile, antithesis, and parody, embodies the beauty of arts and features of products. As for English food advertisements, single or cascading use of rhetoric device stands out unique characters of food advertisement and thus interests the public. (Li, 2012) Take M&M's as example, the slogan for chocolate applied antithesis that compares "mouth" with "hand" to make clear the eagerness to have a taste. Besides, the word "dissolve" describes how chocolates melt in the mouth. Then in the slogan for DOVE chocolate, the application of sense of smell, taste, sight and touch in simile fully performs DOVE's charming.

4. Conclusions

English food slogans are here and there, but what makes the slogan prominent is the distinctiveness. Thereby they make efforts in language, sentence structure and rhetoric device to be more eye-catching to trigger the desire of taste. Translations of English food slogans can not be confined to literal translation. Instead, target consumers, product characters and aesthetic features should also be taken into account (Xia, 2013). Well-designed food slogans and their translations are just like products they advertise, leaving endless aftertaste in people.

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FOOD NUTRITIONAL SUPPLEMENT AS A FATIGUE RECOVERY METHOD FOR BASKETBALL PLAYERS

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ABSTRACT

Basketball is a sport with high strength and intense antagonism, and nutrition consumption of physical and mental in the process of basketball competition and training fatigues players. In order to improve the level of basketball, this article discussed fatigue recovery methods of basketball players from the perspective of nutritional supplements. Specific fatigue recovery food was given and suited the remedy to the case on the basis of analyzing the reason for fatigue and evaluating the fatigue level through categorizing related nutrient elements of fatigue, thereby helping nutrition replenishment of basketball players according to their circumstances and reducing the harm of fatigue for human body.

1. Introduction

The research of sports fatigue has had a number of important results. But the research began since 1970 from the perspective of the development of sports science and sports training. Basketball as one of the world sports with 120 years history is deeply loved by the masses of people, which was invented by Doctor James Naismith who was PE teacher of Young Men's Christian Association training school of Springfield Christian in Massachusetts in the United States in 1891. As the promotion level of basketball is becoming higher and higher, the requirements of physical training and combating for high level basketball athletes are also higher and higher. The elimination of sports fatigue becomes a difficult problem in front of players (Yinlong and Jing, 2012). Competitive abilities of basketball athletes are composed of five sub abilities of physical (including form, function, and physical quality), skill, tactics, psychology and brainpower. Basketball belongs to sport event with open skills in the same competition, which has the characteristics of comprehensive confrontation, much sports consumption and flexible skills. Therefore, the condition of sports fatigue will be encountered in the process of daily training and formal competition of basketball players. Sports fatigue will have a negative effect on the players once it is beyond a certain limit (Jinbo *et al.*, 2014). Fatigue not only directly affects the intensity and quality of training and influences the improvement of performance seriously, but also leads to fatigue increasing and performance decline under the state of fatigue for a long time. Small infections are frequent, especially respiratory tract infection, and they are lack of other clear etiologies, which are called overtraining syndrome. Therefore, how to eliminate the sports fatigue and improve athletic ability has become the focus of the sports training and human movement science field. In order to improve the physical condition of basketball players in the process of sports and reduce or eliminate the harm brought by sports fatigue, this paper studied recovery methods of athletes fatigue

from the perspective of nutritional supplement food.

2. Materials and methods

Classification and functions of nutritional supplements

One part of energy in human body comes from food. The main consumption of food is oxidation in vivo and combustion oxidation in air, which both are in different ways. Respiration action is a slow oxidation process, the energy is gradually released. There is life activities, there will accompany with the metabolism. Process of severe muscle contraction and rapid brain thinking in basketball will accelerate respiration action and metabolism. Human body movement mainly relies on three systems of the ATP - CP (high-energy phosphoric acid) energy supply, glycogen lactic acid energy supply, aerobic energy supply. ATP - CP functional system can supply free energy loaded by ATP for muscle contraction and relaxation, and thus complete the movement. Lactic acid energy system (Yitian *et al*., 2012) refers that muscle glycogen can conduct glycolysis under anaerobic condition in the body for continuous strenuous exercise; lactic acid is produced in the body ultimately, at the same time energy is released for muscle contraction through a series of chemical reactions. Aerobic oxidative system is that muscle glycogen or fat can be thoroughly decomposed when oxygen is sufficient, and finally CO2 and H2O are produced and catabolism of a lot of energies is released at the same time. Basketball sport is hybrid energy system of three energy systems involving in energy supply at the same time. It is worth to note that another energy system begins to work when an energy system is not completely over; they work together in different movement stages (Xiaohua, 2011). According to the energy system and fatigue recovery effects of basketball, nutritional supplements can be divided into protein, carbohydrate, vitamins, and inorganic salts.

2.1. Protein foods

The effect of protein food in the movement energy is not very big, but it is the composition material of movement organs, such as nerve, blood, muscle, etc. Reasonable protein intake is beneficial to the improvement of the body, the abilities of being agile and anti- fatigue. But there is no need to take in a large number before the game. Intense exercise sometimes exceeds the capacity of the body, resulting in motility anaemia, the decline of aerobic and anaerobic exercise energy, and the early appearance of fatigue. Therefore, the athletes need proper protein according to the weight in their daily training. In addition, the protein improves the excitability of nervous system, strengthens the reflection activity of the nervous system, which is conducive to develop the abilities of athletes.

2.2. Saccharide foods

Sugar is the only energy source for the brain. The athletes replenish with sugar timely in the process of sport can avoid the central fatigue, thus ensuring the energy for the training and competition as well as the fast resynthesis of the body's glycogen after exercise.

2.3. Vitamin foods

Vitamin is a kind of low molecular organic compound that is necessary to maintain the body's normal physiological function and peculiar metabolic reactions in cells. When people have vitamin deficiency, the body's activity ability, resistance and the enzyme activity all drop and with metabolic disorders, slow redox process and movement efficiency (Jaiguo *et al*., 2011). With the need of good sensitivity of basketball athletes in skills, so it is important to ensure the saturated vitamin before the games. Reasonable complements for excessively consumed vitamin can guarantee the normal metabolism of body, which is conducive to the activities of the nervous system and endocrine system back to normal.

2.4. Inorganic salt foods

In the process of basketball movement, there will be a large amount of inorganic salt participating in the metabolism activity of the body. If the inorganic salt is short, it can lead metabolic disorders, early appearance of fatigue and influences of physical power. Therefore, the athletes need to supplement inorganic salt in time.

3. Results and discussions

The application of nutritional supplements for fatigue recovery methods

3.1. Generation mechanism of fatigue

Exercise induced fatigue (Beijun and Quan, 2010; Guifang *et al*., 2013; Zhongshan, 2011) is a phenomenon that athletic ability of human movement to a certain degree and physical function ability temporarily drop. Generation mechanism of exercise induced fatigue of basketball players is very complex, which can be divided into central fatigue, peripheral fatigue and neuromuscular junction fatigue. Central fatigue mainly refers to the physiological and biochemical process of nerve in the central nervous system and its role in the development process of exercise induced muscle fatigue. Peripheral fatigue refers to the ways and methods of physiological and biochemical process of the movement muscle neuromuscular information transmission of exercise muscle, excited-contraction coupling and energy metabolism and its induction of exercise induced fatigue. Neuromuscular junction fatigue indicates the fatigue produced in the central parts of the movement. The connections between nerves and muscles are that the central nervous transmits nervous impulses in movement, thereby causing muscle contractions.

3.2. The fatigue diagnosis and evaluation of the athletes

The characteristics of pale face, inattention, low physical control and balance ability, decline of movement coordination, accuracy and stability of action, slow behavior, weak movement, poor performance and many mistakes will appear in athletes' fatigue. Scientific judgment of the appearance of fatigue and its degree can help athletes to analyze their own physical conditions, in order to avoid the sports injury under fatigue condition. In the daily training and competition of basketball athletes, perception of fatigue depends on subjective factors. This paper evaluated athletes' fatigue according to the table 1.

Table 1. Evaluation index of fatigue level

Items	1 score	2 scores	3 scores
Facial color	Blush	Red	Over red or pale, purple sometimes
Amount of sweat	Less	Much	Very much, the whole body
Respiratory rate	Within 22 times/min	22~28 times/min	Over 28 times/min, respiration disturbance
Gait and action	Gentle stability	Waving	Inharmonious, slow gait, waving
Attention	Slight focus	Easy to focus	Unable to focus

3.3. The application of nutritional supplements in fatigue recovery

Athletes can restore fatigue through the use of nutritional supplements on the basis of fatigue level evaluation of athletes. Basketball players can alleviate fatigue and promote the recovery of the body by using nutritional supplements. This paper listed the whey protein food, antioxidant food, energy food, and expressed its effect on fatigue relief.

(1) Whey protein food: whey protein is mainly composed of α whey protein, β-whey protein, bovine serum albumin, immune globulin and some other microelements with biological activity. Whey protein can delay fatigue. In the basketball movement for this long time, muscle glycogen and liver glycogen will be consumed in a large number, branched chain amino acids in blood reduce, free tryptophan content increases, a large amount of tryptophan turn into 5-hydroxytryptamine after getting into the brain barrier, thus inhibiting the excitement of central nervous and appearing sleepiness and fatigue. Whey protein can produce a large amount of branched chain amino acids, block the transportation of tryptophan, maintain excitability of normal brain, and slow down the central fatigue.

(2) Antioxidant food: if the movement time of people is too long, human tissues of skeletal muscle, cardiac muscle, liver will produce a large mass of free radicals, lipid peroxidation reaction will be enhanced. Metabolism of ion energy is disordered after the lipid peroxidation of biological membrane, which results in exercise induced fatigue. In the anaerobic endurance training, the generation of free radicals of the body increases and antioxidant ability reduces under the double stimulation of anoxia and too much exercise loaded. Hence, the use of antioxidants is beneficial to remove the free radical in body, eliminate fatigue quickly, and restore physical ability. Substances that have antioxygenation function are vitamin C, vitamin B6; microelement selenium, copper, manganese, etc.; taurine, glutamic acid amine, etc.

(3) Energy food: energy food mainly provides energy human body needed. For example, the use of creatine significantly improves the intermittent and short time sprint ability, adds explosive power and endurance of muscle, reduces the generation of acid metabolite in the muscle, and increases the protein synthesis ability of muscle fiber. The use of 1, 6 - diphosphonic acid fructose can improve the movement function in the anaerobic environment, enhance anti-fatigue ability, reduce accumulation of lactic acid, maintain the stability of internal environment, and realize the anti-fatigue effect.

4. Conclusions

Sports training process is a process affected by many factors, the complexity of which is difficult to use mathematical formula for quantitative description. Through the study on the movement characteristics of basketball sports, this paper drew lessons from contemporary advanced theory and practice achievements combining with the physiological and biochemical index data of basketball athletes in different training stages from the perspective of energy metabolism in the process of athletes' sports. And the article also put forward the corresponding sufficient nutrition supplements methods of carbohydrate supplement, branched chain amino acids complement, high quality protein, pineal gland, acanthopanax and the food that is good for your brain cells combining the fatigue recovery of the scientific method, which have guiding significance for the organic combination and all-around improvement of skills, physical fitness and intelligence of basketball players for the future training and competition (Juzheng, 2011). Sports scientific research is the strong power of the development of competitive sports. The coaches, athletes and sports teams are the largest beneficiaries of sports scientific research. People have realized the importance of sports scientific research combined with exercise training, but this has not been fully reflected in practice. Therefore, forceful

measures must be taken seriously to tackle the problems of sports scientific research in the role of training practice so as to promote the healthy development of basketball sports in our country.

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IMPACT OF FRENCH AND CHINESE IN CATERING FIELD ON ENGLISH LANGUAGE AND CULTURE

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ABSTRACT
French is the same country with famous catering culture as China. French is considered as an international language in culinary field. Chinese food and culinary term take a great proportion in English as Chinese loanwords as well. This paper, based on the global influence from Chinese and French catering culture, made an analysis of the historic background and vocabulary feature from the Chinese and French loanwords in catering in English, as well as discussed the influence of French and Chinese in catering on English language and culture.

1. Introduction

Throughout the global food culture, there is no more popular culture than China and France. French cuisine predominates the west all the time, which is comprised of different local traditional cuisines in France (Lu, 2012). The advanced culinary skills in French benefit from the several measures implemented after Louis XIV ascended to the throne (Liuyi, 2010). Chinese cuisine is the most famous one in the oriental world. Culinary art is an important component (Wei, 2013) of Chinese traditional culture with long-standing. China gets the reputation of "cuisine kingdom" for a long time.

With the development of globalization, in present catering industry, when expressing some specific objects and phenomenon in English, we usually fail to find words for expression, namely no equivalent words in English because of cultural difference. This is considered as "vacancies" in expression. In this case, we often turn to methods like transliteration, loan translation and semantic regeneration for help, which enables those translated words into daily communication. This is quite common in food industry, while the prosperous Chinese and French culinary art are one of the important quotation origins.

There are so many people working on studies about loanwords in English culinary culture, such as Hu Xingli (Xingli, 2014), Zhang Xiaobing (Xiaobing, 2014), Sun Pei (Pei, 2010), Zhang Ying (Ying, 2013), Xu Aijun (Aijun, 2009). However, most of them are limited to Chinese loanwords or French loanwords in English and few of them make the analysis by combination of the two. This paper took the English loanwords in food industry as an example, and then discussed the influence of Chinese and French in catering industry on English language and culture.

2. Materials and methods

2.1. Materials

Xinhua net London, February 19, 2005--in order to ensure London's successful bidding for Olympic games against Paris, France, the Queen replaced all traditional French menu with English one when she was having dinner with inspection team members of International Olympic Committee on Feb. 18th night. Here is

report "In the memory of public, all menu are written in French in the Queen's formal banquet, for it is considered as the international language in culinary field. The renewal of menu shows the Queen's persistent support for London's bid for Olympic games". Besides, in that banquet, the Queen also replaced all French wine with national ones or products from the Great Britain. According to a waitress in Buckingham Palace, "in this occasion, this is quite unusual for it may be the first time that the menu has not been written in French. But we care more about London's bid for Olympic Games and we want to show English, not the France". This news induced by the change of banquet menu can fully illustrate the influence of France culinary art and French on English and its culture.

At present, English has been in common use of the whole world under globalization. Of course, English has never ceased quoting loanwords including Chinese (Xingli, 2014). Now, there are increasingly more Chinese dishes in many English restaurants (figure1).

2.28 Tuesday	aDuck soup
	Kebab
	Roast chicken breast
	Curry potatoes
	Fried green vegetables
	SH style fried nlldles

Figure 1. Part of a menu in an English restaurant

2.2. Methods

Due to the cultural difference, when expressing some specific objects and phenomenon in certain society and culture in English, for example we fail to find equivalent words in English for Chinese dish names (Xiaobing, 2014), in this case, we usually turn to transliteration, loan translation and semantic regeneration for help and enable these word into English communication. English translator Richard Eden pointed in 1562 that English was no more a flat or monotonous language, and on contrary, it was enriched and enhanced during translation. The quotation of French and Chinese vocabularies greatly enriches the catering English vocabularies. Translation of these vocabularies mainly apply methods like transliteration, transliteration mixing free translation, literal translation, free translation and direct use of original text.

2.2.1. Transliteration

Sometimes, we fail to found equivalence for those words in native language, such as name of human beings or place and others about new concept. At this occasion, we can apply transliteration for leading them into target language. Transliteration is direct, clear, simple and of exotic senses. In Chinese-English or French- English translation, we should only turn to transliteration faced with the phenomenon that some words exist in one language but miss in another. Transliteration can not only make the translation more concise, but can avoid being short of meanings, so as to acquire the best semantic equivalence between the source language and target language. Minnan dialect and Cantonese in Chinese dialects place the greatest impact on Chinese-English borrowing. Loanwords from Cantonese are related to the diet for the most part. For example, "dianxin" or "dimsim" (the latter is transliteration from Cantonese) and "tea" come from Chinese Minnan dialect. "Yamcha" (yumsha) comes from Cantonese. "Doufu, jiaozi, and noodles" are all native food in China. "Wanton" is translated from "云吞" in Cantonese, which is known as "馄饨". "Chopsuey" comes from "杂碎" in Cantonese. Besides, there are also "chow mein" or "chowmein", "chow fan", "GoBa", "Ketchup"

(from "果酱") all from the pronunciation in Cantonese or Minnan dialect. In Chinese traditional phonetic loanwords related to Chinese food and cuisine, the most widely applied may be wok (from Cantonese), which is a necessary cooker in preparing Chinese dishes. Salad was born of France. There was no salad among British dishes and no "salad" word in English language before. It can do nothing but quote this word completely from French. There are also some words stemming from France, including cheese, chef, brandy, and whiskey.

2.2.2. Transliteration mixing free translation

Combining Chinese and English culture together both helps to convey English culture, and present the unique Chinese culture. These loanwords are quite successful with strong vitality and stamina. The word "chopstick" is a blend of chop in Cantonese transliteration with the English word stick. Shaoxing Wine and Tsing Tsao Beer are examples of a transliteration with an English word. Dongpo Pork is blending the transliteration of human name with the English word pork.

2.2.3. Literal translation

Direct application of spelling in source language is to translate new words according to their literal meaning in English. During translation, we generally apply literal translation if there is an equivalence which is close to objects from source language in target language. Moreover, we simply translate them into target language one by one. There are some English words about cooking stemming from French as follows:

Gourmet, chef, maitre d'hotel (hotel manager), cuisine, haute cuisine(famous delicacy); French HauteCuisine (French Nouvelle Cuisine) (a famous French dish), a la carte (order by menu), table d'hote meaning a setmeal (when hotel or restaurant fixes time, orders dishes and fixes price). French is famous for its delicacy and wine, while milk products and wine are the most classical elements in forging its food culture. For example, a lot of French wine is translated with French places of origin, like Bordeaux, Cognac, Burgundy, and Champagne. Both Champagne and Cognac got the permission of French government to be branded with name of local place with good quality. All sparking wine can only be called vin mousseux in French if produced outside of Champagne. All brandy can only be called eau-de-vie (meaning water of life) in French if produced outside Cognac.

Chinese food as a culture field leaves the greatest influence on people's life in English and United States. Chinese cuisine has won great popularity in these countries. Chinese restaurant is distributed around everywhere so that it is safely to say that Chinese food and culinary term make a great proportion of Chinese loanwords in English. A great number of Chinese dishes are absorbed into English vocabularies by literal translation, such as bird's nest, shark's fin, winter melon, bear's paw, lotus seeds, beggar's chicken, drunken shrimp, and spring roll.

2.2.4. Direct use of original text

"Bon appetite!" is spoken before dinner and can be directly applied in general term. This expression directly stems from French without translation. Besides, it is common to hear "ganbei" in banquet from foreigners.

3. Results and discussions

France is considered to be the leader in garment and diet in Europe, so that there are a lot of French loanwords in English. For example,there are some synonyms in English meaning "美食家", such as gourmet, connoisseur, bon vivant, epicure, gastronome. Gastronomer, and gastronomist. The former three words are all borrowed from French, and the gourmet is the most widely used one. French words have long since been quoted into English before the Norman Conquest. Objects like castle and edible bacon are all absorbed into English from France.

After Norman conquered England in 1066, French has taken place of English and became a symbol of status for the language of government and noble. A great number of French words flooded into English (Cheng, 2013), which reflects in all aspects related to ruling class, like politics, religion, law, military affair, social intercourse, garment and diet. French words turned into the main body of words in those fields. Culture integration that time quoted English a lot of diction in upper class, such as diction from natives on animals, like ox, swine, calf, and deer. Once these animals appeared in the table of rulers, they would be called beef, pork, veal and venison in literary French. During the English restoration of monarchy in 1660, the whole England pursued a luxurious atmosphere and royal members worshiped the France culture and considered speaking French as a sign of refinement so that a great number of French words were incorporated into English. Those words concern military affairs, business, art, diet, etc, which reflects the real lifestyle of ruling classes, like ballet, burlesque, champagne, liaison, decor and soup. This French intrusion has lasted several centuries and there are still many restaurants with even a whole menu in French. Nineteenth century is one with the largest number of French words incorporated into English since the age of Middle English and these words mostly concern literal art, foreign affairs and diet. The following are some common examples (table 1):

Table 1. Common French loanword

WORD	literature	elite	baton	Renai-ssance	premier	attache	prestige	chef	fiancee	chauffeur

Note: words above are all French loanwords.

When these words are widely accepted by the whole Britain, we can say that British are expressing their idea assisted by French, which fully proves the influence of French words on English. Until now, French still plays an important part in English and often considered as refinement.

It is a bit later for Chinese to be incorporated into English culture, almost after Ming dynasty in China. However, it developed quite rapidly. The trade development between China and English after 17th century promoted the increase of Chinese loanwords in English. There are increasingly more words about cooking incorporated into Oxford English Dictionary. (table 2)

Table 2. Some Chinese loanwords

WORD	tea	ginseng	kumqua	bohea	dimsim	yumsha	chowmein	wanton	hopsuey	wok

Note: all words above come from Chinese pronunciation (especially dialect in southeast China)

In this table 2, tea is the word which enters English in an early stage. Portuguese brought tea from China to the Europe and its name at that time was cha in Cantonese. However, they failed to spread the habits of drinking tea. About 100years later, the Dutch gave full play to their business ability and sold tea to the Europe and worked hard to make it popular. For its strongholds of Ducth lied in south Fujian and Taiwan, cha name was changed into "tea" according to Minnan dialect.

Since the 19th century, a great number of Chinese went abroad to make a living and most of them worked on catering industry. Lots of overseas Chinese who are Cantonese speakers led words concerning diet into English, such as dimsim, yumsha, chowmein, wanton, hopsuey, and wok. Diet plays an important role in Chinese culture. "Chinese culture can also be called the culture of oral culture". For language reflects culture, the abundant words about

cooking in Chinese provide the evidence that Chinese nation pursues delicacy. Of course, with the communication and integration among different cultures, the gap in diet between the Orient and West is narrowing and mutual borrowings of words about cooking are becoming increasingly more frequent.

Language is open because the society is open and forward. The emergence of new things and concepts is supposed to be reflected in language. Meanwhile, in language development history, because of the interaction in aspects like politics, economy, and culture among nations, mutual borrowing of words in different languages often occur when unique objects and concepts of one nation gradually gets accepted by other nations. As suggested above, China and France are two typical representatives.

France is the same country with famous diet culture as China. What is the most common between the two is they both attach great importance on diet, culinary culture and art. Both of them can be called the country of delicacy in the whole world. French is considered as an international language in culinary filed. Chinese food and culinary termalso make a great proportion of Chinese loanwords in English. As the first real global language, English has been the language available for global use with its inclination of absorbing new words, and globalization also speeds up its assimilation of words. Meanwhile, such a great number of English learners in China and its rising global influence predict that more and more English words will be produced form China. President Paul JJ Payack in the Global Language Monitor, an organization for counseling service whose headquarter lies in San Diego said "with an increasing influence of China, China leaves a greater effect on the global world than countries in which English is the native language. This is quite surprising. Chinese belongs to the Sino-Tibetan, while English belongs to Indo-European (Fang, 2014). There is a great gap between the two languages. Therefore, when making a subtle change in absorbing Chinese into English, then a unique Chinglish comes out. Since 1994, there are around 5%-20% global English words quoted from Chinese and this ratio overpasses any other single origin."

The need of communication in daily life engenders loanwords. With this kind of requirement, loanwords will naturally be produced from one language to another. In English, emergence of some loanwords does not simply result from Chinese culture. From perspective of history, English words are always changing and extending. It is safely to say that only with continual metabolism of words, can English be of long-standing vitality. It is one of important ways of metabolism to in absorbing new loanwords while throwing away the outdated ones. We can witness the great influence of Chinese culture from the increasing Chinese loanwords in English. We believe that with China's emergence as a world power, our enhanced international status and the continual extensive cultural exchanges, Chinese culture will be accepted and understood by more and more countries.

4. Conclusions

Language is based on words, and it reflects the social development and changes with great subtlety (Fang, 2014), and it is imposing improvement on language all the time. From the perspective of human beings, every language can be regarded as a fortune and can make certain contributions to the common culture heritage. Language has an effect on culture, and when the effect permeate another culture, its influence can be too great to be left behind, just as the influence from French cuisine on European culture continues till today in 21st century from the era of Louis XIV. Meanwhile, a Chinese loanword in English appears in certain scope and Chinese culture will certainly have a greater and greater influence on the English culture. Moreover, public physiologies to pursue new things and influence from cultural traditions all promote

the rapid increase of new words and phrases. All of these revitalize our language and lives, and become an eye-catching phenomenon for social culture.

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ANALYSIS AND PROSPECT OF MANUFACTURE INDUSTRY OF FRUIT AND VEGETABLE JUICES AND THEIR DRINK IN CHINA

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ABSTRACT
In recent years, in manufacture industry of fruit and vegetable juice and their drink, output value and profit both grow, production layout is optimized gradually, the potential of increase production is huge, and the leading enterprises expand rapidly and in a trend of stable development. Through comprehensively analysis on vegetable juice beverage market before and after 2012, this paper stated the development situation of fruit and vegetable drink in our country, and simply introduced production technological process of drink manufacture industry taking corn stalk drink as an example, thereby improving the cognition of public on fruit and vegetable drinks and the green image of drink manufacture industry, thus to motivate economical development of fruit and vegetable drink manufacture industry.

1. Introduction

The emerging of fruit and vegetable juice in China comes from tea beverage. Fruit and vegetable juice beverage is the key development industry of "the 11th Five-Year Plan" of national food industry and also the key support industry of agricultural industrialization, with an incomparable speed (Chuan, Junye and Huishang, 2012). Permeability of fruit and vegetable beverage of first half year in 2003 was 31.3% and then increased. Up to the second half year of 2005, its permeability has increased to 50.4%, with an amplification of 61% and total increase of three years of 32%. In recent years, fruit and vegetable juices and their drink market is in stable development. Till 2012, sized enterprise output and profit of fruit and vegetable juice drink manufacture industry doubled. According to the data of State Statistics Bureau, fruit and vegetable juices and their drinks output of our country in 2012 is 22.2917 million t, with a year-on-year growth of 14.2% (Chao and Qianyu, 2013; Guoping, Li and Yuequn, 2011). Up to the end of 2012, the sized processing enterprises for fruit and vegetable juice is 448, the sales amount reached 107,392 million yuan with a year-on year growth of 12.8%, value of export delivery reached 8,694 million yuan with a year-on-year growth of 10.7%. Meanwhile, leading enterprises have appeared in the industry, such as Huiyuan Juice, Haisheng Fruit Industry, Guotou Zhonglu, Andre Juice, etc. Sales amount of these four leading enterprises accounts for 8.8% of the whole industry, and it is estimated that that number will exceed 30% in the future (Yan and Hongbo, 2011; Yajun, Shunbo and Xuexi, 2013).

Based on the data above, it is found that, the developing achievement of fruit and vegetable juice drink manufacture industry is delightful. In recent years, many reports focus on fruit and vegetable juices and their drink manufacture industry. In the article of Monitoring and Prewarning of Fruit and

Vegetable Juices and Their Drink Manufacture Industry in 2012, Zhao Xiaoyan, Ma Yue (Xiaoyan and Yue, 2013) et al confirmed that fruit and vegetable juices and their drink manufacture industry kept in a trend of stable development, and proposed problems existing in the industry and the improvement suggestions based on that. In in article of Downward Prosperity and Increased Inventory of Beverage Industry in the First Three Quarters in 2012, Li Lu (Lu, 2013) made a all-around explanation on the development trend in the next stage and the operation of beverage industry in 2012, analyzed the reasons for upward prosperity of beverage industry in our country and proposed solutions accordingly. Although fruit and vegetable juice drink manufacture industry is booming, some people still worry about the safety of fruit and vegetable juice drink. Based on that, this paper introduced the production technological process pf drink manufacture industry in detail taking corn stalk drink as an example, so as to further present the charming of technology and internal value of drink manufacture industry and highlight the powerful healthy function and edible value of fruit and vegetable drink.

2. Materials and methods

2.1. Materials and reagents

Yu Dan No. 8 corn (from test field of College of Animal Science and Technology of Nanjing Agricultural University); xylitol (GB 13509-2005), citric acid (GB 6782-1986), carboxymethylcellulose sodium-Na (CMC-Na, GB 1904-2005) and ascorbic acid (GB14754-1993) (commercially available and edible grade).

2.2. Analysis of output and nutrient content of corn stalk in different growth stages

(1) Analysis of output of stalk juice. Output of stalk juice is measured in the perspectives of juice yield and output of stalk. Juice yield= (weight of stalk juice/ fresh weight of stalk)× 100%. (2) Analysis of soluble sugar of stalk juice. After squeezing fresh stalk, high performance liquid chromatography was adopted to analyze soluble sugar in stalk juice (including glucose, fructose, sucrose, xylose, mannose, Arabian sugar, lactose, galactose). (3) Analysis of mineral element in stalk juice. After squeezing fresh stalk, ICP Atomic Absorption Spectrometry was adopted to detect the content of mineral element in stalk juice. (4) Analysis of amino acid content in stalk juice. Smash the stalk and weigh 2.0 g; extract it with 4 times of ultrasonic for 30 min by 30 ml 80% ethyl alcohol and then centrifuge it at 15 000 r/min for 15 min; merge the supernatant and analyze it by high performance liquid chromatography. (5) Analysis of vitamin content in stalk juice.

2.3. Production technological process of corn stalk drink

Corn stalk → remove the leaves → wash → smash → squeeze juice → filtration → color protecting → deploy → heating (60℃) → canning → sterilization (100^0C, 10min) → cooling → stalk juice (Yutang, Ru and Ying et al, 2005).

2.4. Flavor deploying test of corn stalk juice drink

Orthogonal test was performed based on factors of stalk juice (A), xylitol (B), citric acid (C) and CMC-Na (D) (table 1) so as to confirm the best formula for corn stalk juice.

Table 1. Factor level of orthogonal test of corn stalk juice drink formula

Content of factors				
No.	A:stalk juice (%)	B: xylitol (g/ml)	C: citric acid (g/ml)	D:CMC-Na (mg/ml)
1	15	0.045	0.16	0.6
2	20	0.065	0.20	0.9
3	25	0.085	0.24	1.2

2.5. Assessment standard of quality of corn stalk juice drink

The assessment standard of quality of corn stalk juice drink was formulated according to the color, smell and flavor of products and combining with the characteristics of stalk juice (table 5). The assessment group was composed of five people and they assessed the drink in the aspects of color, flavor and smell.

Table 2. Score standard of sensory index of drink

Item	Total score	Standard	Score
Color	30	Vivid color with lime green	25~30
		Not vivid enough color	20~24
		No color	<20
Smell	30	Fresh scent of stalk and with no particular smell	25~30
		Light frangrance	20~24
		No frangrance	<20
Flavor	40	Proper coordination of various flavors in formula	35~40
		Acid or sweat	25~34
		No taste or uncoordinated taste	<25

3. Result and discussions

3.1. Output of corn stalk juice in different growth stages

Analysis test of corn stalk juice was performed here since juice yield and output can directly affect drink supply and product cost. As shown in figure 1, juice yield of corn stalk in elongation stage, tasseling stage, silking stage, milk-ripe stage are 52.33%, 44.73%, 43.24%, 30.62%, respectively. With the promotion of growth stage of corn, juice yield of stalk constantly decreases, relating to the deepening of lignification of corn stalk. As shown in figure 2, output of corn stalk in elongation stage, tasseling stage, silking stage, milk-ripe stage are 618.41g, 1411.73g, 1404.74g, 992.70g each plant, respectively, with a trend of rise first then decrease. Though integrated juice yield and output of stalk into account, it was concluded that, output of stalk juice in elongation stage, tasseling stage, silking stage, milk-ripe stage are 232.59g, 631.46g, 607.41g, 304.00 g each plant. Considering from juice yield and output of stalk, tasseling stage has the highest output of stalk juice and stalk in this stage is the most suitable raw materials for producing drink.

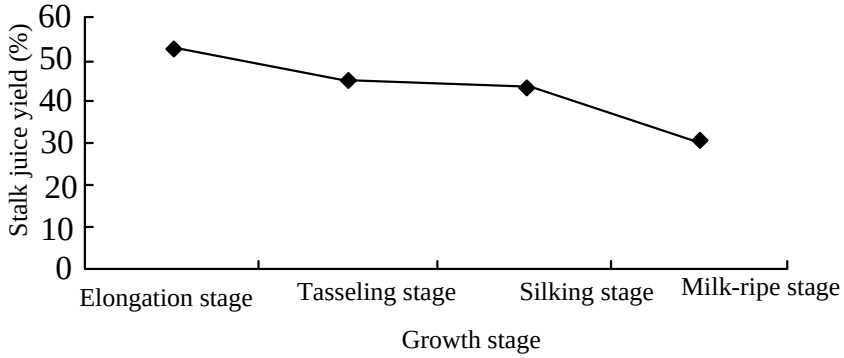

Figure 1. Juice yield of corn stalk in different growth stages

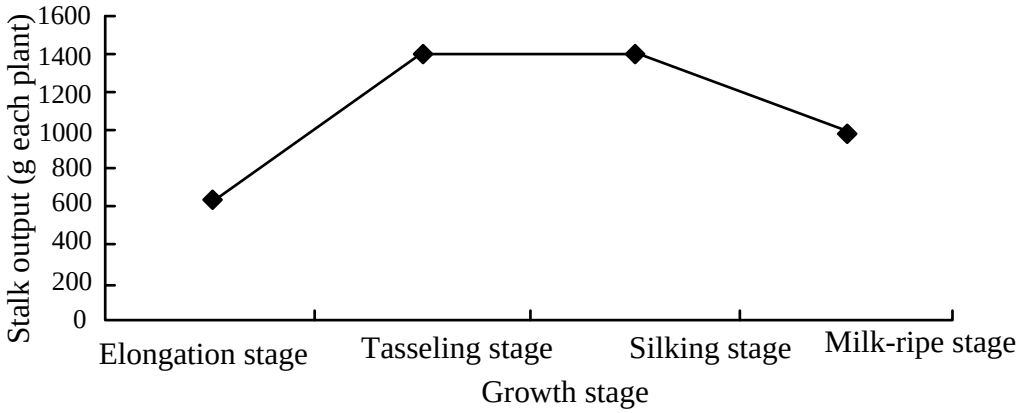

Figure 2. Corn stalk output in different growth stage

3.2. Content of soluble sugar in corn stalk juice in different growth stages

High performance liquid chromatography analysis result showed that, soluble sugar in corn stalk was fructose and saccharose. As shown in figure 3, content of fructose from different growth stages of corn is much higher than saccharose. The content of fructose increases constantly with the progress of growth stage, and reaches 11.66 mg/mL, the maximum, in milk-ripe stage; while the content of saccharose rises first and then decreases and reaches 2.8 mg/mL, the maximum, in silking stage. The maximum content of fructose is 4.16 times as much as saccharose. Therefore, analysis of soluble sugar in corn stalk juice can confirm the stage with the maximum content of soluble sugar, thereby providing basis for the matching of sugar in corn stalk juice.

3.3. Result of flavor deployment test of corn stalk juice

The detailed result of orthogonal test of corn stalk juice drink formula is shown in table 3. Influence degree of multiple factors on flavor of corn stalk juice is B (xylitol)> C (citric acid)> A (stalk juice)> D (CMC-Na). The ideal formula for corn stalk juice is A3B3C1D3. Since stalk juice is acid solution and main sugar contained is fructose, drink with good taste can be produced by adding few sweetening agent and acidulant and acidulant (xylitol 0.085 g/mL, citric acid 0.16 g/mL).

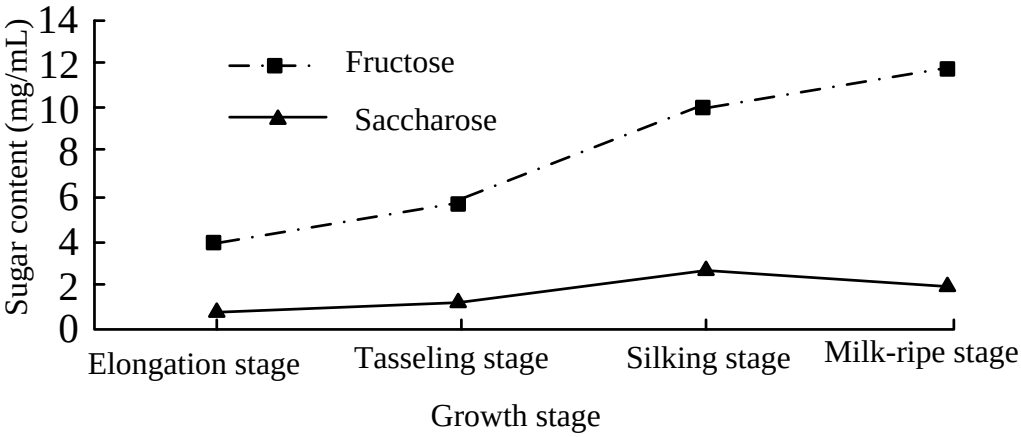

Figure 3. Content change of sugar in corn stalk juice in different growth stages

Table 3. Result of orthogonal test of stalk drinks formula

Test no.	Factor				Score			
	A	B	C	D	Color	Smell	Flavor	Total score
1	1	1	1	1	22.8	25.4	24.6	72.8
2	1	2	2	2	23.4	25.0	25.8	74.2
3	1	3	3	3	22.4	24.6	29.6	76.6
4	2	1	2	3	28.8	25.6	23.2	77.6
5	2	2	3	1	23.8	24.0	25.8	73.6
6	2	3	1	2	24.8	24.0	36.2	85.0
7	3	1	3	2	25.4	24.8	24.6	74.8
8	3	2	1	3	26.0	24.4	30.2	80.6
9	3	3	2	1	24.8	24.8	31.4	81.0
K1	741.533	75.067	79.967	75.800				
K2	78.733	76.133	77.600	78.000				
K3	78.800	80.867	75.000	78.267				
R	4.267	5.800	4.467	2.467				
Best level	A3	B3	C1	D3				

4. Conclusions

With the improvement of living level and cognition on fruit and vegetable juice, the content of fruit and vegetable juice develops from ⩽10% in the past to multiple series of product with juice content of 100%, 50%, 40%. 30% and 20%, which conforms to the demand of different consumption groups? Notably, 100% juice has known and accepted by consumers (Jianxin and Chunjie, 2012; Xianfeng, Ping and Wenfei, 2010). The variety of fruit and vegetable juice has formed into structure of orange and apple as primary and strawberry, peach, apricot and pear as supplements (Jianhua, 2011).

In the introduction of detailed cases in this paper, the manufacture technology is excellent and innovative with no pollution. Using corn stalk in tasseling stage for drink production not only has the highest output and rich nutrient, but also can ensure the health of consumer to the largest extent and inspire the purchasing desire of consumer with maximum efficiency, thereby pulling the economical development of fruit and vegetable juice drink manufacture industry.

All in all, Chinese drink industry is constantly developing and mature, with improvement year by year, diverse categories and more choices for consumer. China has good development environment and broad consumer market for beverage brand. Many international enterprises enter into and occupy Chinese market, exerting much competition pressure on the domestic enterprise. However, fruit and vegetable juices and their drink market still keeps trend of rapid development. Not only yield and profit are in double increase, and the production layout is constantly optimizing, but also the industry presents huge yield increasing potential. In addition, the power in aspect of output is also increasing day by day and about the same with the powerful countries in the world. It is obvious to all that the prospect of fruit and vegetable juice beverage is excellent.

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ERRATA

In the paper: „OPTIMIZATION OF PECTIN ISOLATION METHOD FROM PINEAPPLE (ANANAS COMOSUS L.) WASTE" by Rajibul Karim, M. Burhan Uddin, Md. Fahad Jubayer. publish in the Carpathian Journal of Food Science and Technology **Volume 6, issue 2, page 116-122**, at the end of manuscript, page 122 it will insert the text bellow:

Acknowledegment:

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