

# **INVESTIGATION OF CHANGES IN ANTIOXIDANT ACTIVITIES OF CAMELIZATION PRODUCTS UNDER VARIOUS TIME REGIMES AND pH RANGES**

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## **ABSTRACT**

Caramelization is a process of heating sugars to produce brown color and typical caramel flavor which is most widely used in food industry as a natural food color, flavor and antioxidant agent. These properties of caramelization products (CPs) are heavily dependent on type of sugar, time of heating and pH range. A study was conducted to prepare CPs utilizing different type of sugars (dextrose; fructose; Liquid glucose; sucrose); and to investigate the changes in products characteristics at different time and pH reaction conditions using response surface methodology. The ranges of processing variables selected for this study were: time, 30-150 min and pH, 4-10. The experimental values of reducing sugars, browning intensity, reducing power and antioxidant activity showed that response variable was mainly dependent on increase in time of processing regardless of sugar type. Browning reactions occurred to a greater extent at alkaline pH while dextrose was more reactive to caramelization than other sugars at neutral pH. After 150 min, dextrose, fructose, L-glucose and sucrose were degraded to 46.9%, 34.9%, 23.4% and 39.7%, respectively. CPs from hexose sugars rendered the greater reducing power, compared with CPs from pentose. DPPH radical scavenging activity was observed in descending order such as: fructose>dextrose>sucrose>L-glucose ( $p \leq 0.01$ ). The results of this study demonstrated that dextrose and fructose are a good source of natural antioxidant involving caramelization and can be potentially used as new food ingredients to enhance the shelf life of food products.