



EXTRACTION OF ESSENTIAL OIL FROM AJWAIN SEED BY USING SOLVENT EXTRACTION METHOD AND ITS UTILIZATION IN VALUE ADDED BAKERY PRODUCT

Darshankumar A. Bhingaradiya¹, Subhajit Ray^{2✉}

¹*M.tech food engineering & technology;*

²*Department of Food Engineering & Technology, Central Institute of Technology Kokrajhar, Kokrajhar, BTAD, Assam: 783370, India, Mobile: +919330054980, ✉subhajit@cit.ac.in*

<https://doi.org/10.34302/crpjfst/2024.16.2.7>

Article history:

Received: January 1st, 2024

Accepted: June 3rd, 2024

Keywords:

Ajwain, essential oil;

Bioactive compound;

Nutritional;

Total phenolic content (TPC);

Total flavonoid content (TFC).

ABSTRACT

In the present study, nutritional composition of ajwain seed, bioactive components of different solvent extracted ajwain essential oil and nutritional composition, textural attributes and sensory properties of ajwain essential oil fortified cookies were investigated. Ajwain seed has shown to have higher amount of carbohydrate (55.38%), fat (10.08%) and protein (15.73%) and also significant ash content (7%) and crude fibre content (18.98%). Furthermore, it contains potential functional qualities, including TFC (2.0608 mg quercetin/gm), TPC (126.021 mg GAE/100 gm), and antioxidant content of 36.36 g/ml. Essential oil extracted by using solvent extraction method with the application of different solvents and its combination was analysed in terms of yield and characterization of bioactive constituents using GC-MS technique. Maximum yield was found in combination of n-hexane and petroleum ether (3.2%). Thymol was found as dominant bioactive constituents both by using petroleum ether (75.831%) and combination of n-hexane and petroleum ether (71.372%) whereas p-cymene showed the least by using combination of combination of n-hexane and petroleum ether (1.602%). Nutritional constituents in terms of carbohydrate (51.89%), fat (31.004%), protein (7.14%), crude fibre (3.14%), Ash (2.59%) and moisture content (4.23%) of 1 ml essential oil fortified ajwainjeera cookies were found as satisfactory. Moreover, fortified cookie was shown best sensory acceptability using 9-point hedonic rating test. Texture profile analysis of essential oil fortified cookie results satisfactory values. Experimental investigation revealed that antimicrobial potential of the essential oil and essential oil fortified cookie against *Staphylococcus aureus*, *Bacillus cereus*, and *E. coli* were highly satisfactory. (If we are reducing word count then some of part missed in abstract.)