Enhancement of the Aroma Profile of Cold-Water-Soluble Instant Black Tea by Using Encapsulated Black Tea Aroma

H.A.I.L. Hettiarachchi[1]*, G.A.A.R. Perera[1], K.G.N.P. Piyasena[2]

[1]*Uva Wellassa University, Badulla, 90000, Sri Lanka*
[2]*Tea Research Institute of Sri Lanka, Thalawakelle, 22100, Sri Lanka*
**iroshahettiarachchi95@gmail.com*

The value of cold-water-soluble instant black tea (CWS-IBT) can be further enhanced by the reincorporation of tea aroma generated during instant tea manufacture. However, the tea aroma generated from the spinning cone column machine during the extraction of soluble solids from tea is hardly usable for this purpose due to its much-diluted aqueous nature. Therefore, this study explored the potential of improving the aroma quality of CWS-IBT by incorporating encapsulated black tea aroma. Tea aroma extract mixed with maltodextrin and gum arabic was freeze-dried to obtain encapsulated black tea aroma. The minimum level of incorporation of encapsulated black tea aroma that distinctively enhances the aroma profile of CWS-IBT was determined by conducting two triangle tests with 0.5% and 1.0% (w/w) levels of incorporation of encapsulated black tea aroma using thirty untrained panelists. The aroma profile of the selected sample was analysed at 45-day intervals for three months. Solid-phase microextraction-gas chromatography-mass spectrometry technique was used for aroma profile analysis. Sensory data were evaluated using a standard table and physicochemical data were subjected to Analysis of Variance using Minitab (Version 17) software. Panelists were able to notice a distinctive difference in the aroma of the CWS-IBT incorporated with 1.0% of encapsulated black tea aroma. Compounds with pleasant odours such as geraniol (8.34 ± 0.78%), linalool (6.05 ± 0.88%), (E)-cinnamaldehyde (5.88 ± 0.36%), benzaldehyde (3.60 ± 0.30%), β-ionone (3.47 ± 0.03%), benzyl alcohol (2.39 ± 0.23%), and methyl salicylate (1.41 ± 0.19%) were among the 30 volatile compounds identified in the aroma incorporated CWS-IBT. These compounds were more stable during storage. Thus, the incorporation of 1.0% encapsulated black tea aroma into CWS-IBT is sufficient for achieving a distinctive enhancement in the aroma profile of CWS-IBT.

Keywords: Encapsulation, Instant black tea, Sensory evaluation, Tea aroma, Tea volatiles

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