ISOLATION OF NATURAL COLOURANTS FROM CRUDE GREEN TEA EXTRACTS FOR FOOD APPLICATIONS

A dissertation submitted to the
Faculty of Animal science and Export Agriculture
Uva Wellassa University
In partial fulfillment of the requirement for the award of the
Degree of Bachelor of Science in Tea Technology and Value Addition

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2021

ABSTRACT

A natural food colourant is any dye, pigment or any other substance obtained from a natural source. The demand for natural food colours in the international market is increasing rapidly due to the increasing public awareness on harmful effects of synthetic food colourants. Hence this study was aimed at isolating food colourants using green tea based refuse tea and dust grade as a value added product. Accordingly, colour extraction of refuse tea (8 % moisture, 5.58 % ash, 15.51 % crude fiber, 2.06 % fat and 19.68 % protein) and green tea dust (6.06 % moisture, 5.63 % ash, 14.55 % crude fiber, 2.07 % fat and 15.57 % protein) was initially done by sonication and simple water bath techniques. The most desirable samples were then selected based on the colour intensity values (b*) and absorbance values. The selected samples were stabilized with 3 % carrageenan which converted the filtrate into a gel. The stability of the colourants was studied against pH, concentration and time-temperature combinations. The consumer preference for the products were studied using a structured sensory evaluation. According to the results yellowness (5 Y8/10 to 5 Y8/12) could be expected in 3 to 4 pH range in refuse tea based colourant and yellowness (5 Y8/6 to 5 Y8/10) could be expected in 3 to 6 pH range in the green tea dust based colourant. It was observed that with the increase of the temperature darkness of the colourant significantly rises, especially from 60 °C and above, resulting in a hue approximated to caramel black. Both colourants showed yellow hues from 0.3 to 2 % v/v concentration level. Moreover both colourants are having considerable levels of polyphenol content, antioxidant activity and caffeine content, which contribute to human health promotion. Therefore, it can be inferred that developing colourants using crude green tea extract to be sustainable and safe alternative for synthetic colourants used in the food industry.

Keywords: Dust; Extraction; Green tea; Natural food colour; Refuse tea