PRODUCTION OF SOME NATURAL COLORS FROM FOOD WASTES AND THEIR APPLICATION IN SOME FOOD PRODUCTS

By

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B. Sc. Agric., Food Science and Technology, Ain Shams Univ., 2004

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ABSTRACT

Om-Hashem Ahmed Amin Ali: Production of some Natural Colors from Food Wastes and Their Application in some Food Products. Unpublished M.Sc. Thesis, Department of Food Science, Faculty of Agriculture, Ain Shams University 2017.

The present research was carried out to produce some natural food colors from food wastes such as; anthocyanins (red color) from red onion peels (*Allium cepa*), carotenoids (yellow color) from mandarin peels (*Citrus reticulate)* and chlorophylls (green color) from carrot leaves (*Daucus carota L.*), to enhance the appearance of food products and reduce the use of synthetic colors; that harmful to consumers on the long time. The results showed that acidified ethanol and methanol (0.01% Hcl) were the greatest efficient in extracting red onion peel anthocyanins (red color) at low pH (≤ 3.0) followed by distilled water and acidified distilled water(0.01% Hcl) , while the greatest efficient solvents in extracting mandarin peels carotenoids (yellow color) were methanol and ethanol at pH 7.0. On the other hand, methanol and ethanol were the greatest efficient solvent systems to extract carrot leaves chlorophylls (green color) at pH 6.0. Natural extracted carotenoids from mandarin peels were the greatest stabilities at different temperatures(40, 60, 80 and 100ºC) for long times up to 120min followed by extracted chlorophylls from carrot leaves, while extracted anthocyanins from red onion peels the lowest stabilities on the same conditions of temperatures and times. Hard candy manufactured by 0.25% of natural red color extracted (anthocyanins) by acidified ethanol and methanol (0.01% Hcl) recorded higher scores of color and overall acceptability compared with synthetic color samples. On the other hand, 0.2, 0.25 and 0.3% level of natural yellow color extracted (carotenoids) from mandarin peels by methanol and ethanol recorded high score of color and overall acceptability compared with synthetic color samples.For instant, hard candy samples manufactured by natural green

color (chlorophylls) by ethanol and methanol at 2.5 and 3.0% levels, respectively recorded higher score of color compared with synthetic color samples.Glazing jelly manufactured by natural red color extracted from red onion peels at 0.25 and 0.3% levels recorded higher scores of color and overall acceptability, respectively compared with synthetic color samples. While added natural yellow color extracted from mandarin peels at 2.0% level recorded high score of color, but added 1.0 and 1.5% levels of natural yellow color recorded higher score of overall acceptability compared with synthetic color samples. On the other hand, added of natural green color extracted from carrot leaves byethanol and methanol at 1.5 and 2.0% levels, respectively recorded higher scores of color andoverall acceptability values, compared with synthetic color samples.

Key words: Food wastes, Natural colors, Artificial colors, Jelly, Hard candy, Confectionery products, Thermal stability, pH, Onion wastes, Citrus wastes, Carrot leaves waste, Anthocyanins, Carotenoids, Chlorophylls.

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