UNIVERSITI TEKNOLOGI MARA

STUDY OF EXTRACTION METHOD AND THE STABILITY OF RED PIGMENT FROM VARIOUS NATURAL SOURCE FOR FOOD COLOURING

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ABSTRACT

Nowadays, colorants, additives, or supplements used in food industry, cosmetics and pharmaceuticals are came from various kinds of pigments. However, synthetic pigments colorant has adverse effect that cause toxicity and carcinogenity in the human body. This will affect the usage of synthetic pigments in the industry. Therefore the natural pigments become the best replacement for synthetic pigments. The objectives of this research is aimed to study the extraction method of red pigment from natural sources dragon fruit, roselle, and red grapes. To study the effect of different storage parameters (time, temperature, taste, and colour) on the stability of the red pigment incorporated in food product and to study the effect of microencapsulation of red pigment extracted. In extraction of powder, Roselle with distilled water has 22.1 g of powder whereas roselle with ethanol has 6.1 g only. For Grape skins, the quantity of the powder of roselle with distilled water in greater than in roselle with ethanol which is 21 g and 0.73 g respectively. Next, for dragon fruits skin, the quantity of the powder is also comparable where with distilled water is 14.5 g and solvent is 1.77 g. A muffin is cooked and the extracted food dye is fused into the muffin. The resulted muffin will be tested through several tests such as light presence test, storage time test, temperature test, and taste and colour test. The stability test of coloured muffin temperature test is assumed that the muffin placed at 4oC surrounding stand a better chance of surviving longer than the muffin placed at 60oC. As for the presence of light test, the expected result is the muffin placed in dark place lasts longer. Last but not least, for the taste and colour test for coloured muffin, the covered muffin at a dark space will be longer lasting compared to the muffin exposed to an open space.

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INTRODUCTION

1.1 BACKGROUND

For long time ago years, both synthetic pigment colorant and natural pigment colorant have been broadly used in many fields such as food colouring, textile industries, agricultural practices and researches, water science and technology (Tibor, 2007). Nevertheless, the synthetic pigment colorant has adverse effect to human health in food industry such as toxicity and carcinogenity. The example of synthetic pigment is tartrazine (E102) and sudan red. (K. K. Wo et al., 2011).

As a replacement for synthetic pigment colorant, natural pigment colorants from natural sources came into considerations especially from plants, food, and fungi. Natural colorants and pigments from plants are widely use in colouring food, beverages, confectionery, and bakery products. Colours of plant source are environmentally friendly and non-toxic and therefore it was preferred rather than synthetic colours. Natural colours that provided by plant pigment to food can be grouped into four primary classes which are chlorophylls, carotenoids, flavonoids/anthocynins and betalains. (A. Shamina et al., 2007)

In this study, only anthocynins and betalains involved. Betalain is water-soluble pigment and can be classified into two main groups which is betacynin and betaxanthin. Betacynin is will give out red-violet color whereas betaxanthin is will give the yellow-orange color. The potential sources of betacynanin are red beet, cactus pear and pitaya. Pitaya is also known as Dragon fruits. But in this experiment, pitaya where choosed because it is easily to get in the Local Supermarket. In addition, dragon fruits alson rich in betalains which similar of colour pigment founds in beetroot. Beetrot has been most important betalain source for natural red colouring. However, high nitrate concentration in