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The Preliminary Study of The Dye Extraction from The Avocado Seed Using Ultrasonic Assisted Extraction

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Abstract

Avocado (*Persea americana Mill*) is the plant produced in the tropical countries, for instance Indonesia, which is the third largest avocado producer in the world. The crushed avocado seed can produce natural orange dye and also has potential to be natural food dye. The extraction using ultrasonic wave (ultrasonic assisted extraction – UAE) is proven to give the better result than the maceration extraction. The aim of this research is to study the influence of the temperature and the feed to solvent ratio towards the yield, the dye color intensity and the phenolic content using the two factor factorial design in the avocado seed UAE. The avocado seed was crushed and blended with aquades as much as 70% from the seed mass. The slurry was incubated at 24 °C for 35 minutes. Afterwards, the slurry was extracted using sonicator with methanol as solvent. The variations of the research were the extraction temperature and ratio of feed to solvent, that are 30, 40, 50, 60, 70 °C and 1:3, 1:6, 1:9, 1:12, 1:15 respectively. The extract was filtrated from the raffinate using the Buchner then the solvent was separated using the vacuum evaporator at 3,37 mbar and the waterbath temperature of 50 °C. The analysis of the color intensity and the phenolic content were conducted by means of the absorbance measurement using the UV-Vis Spectrophotometer. In addition, the dye was also analyzed with GC-MS to get the information about the compound which causes the orange appearance. Based on the variance analysis of the experimental design, it can be concluded that the temperature and the feed to solvent ratio do not affect the yield, the phenolic content and the color intensity. However, there is an interaction of the two factors towards those three responses. The highest yield of the results is 22.6 % obtained from temperature extraction 70 °C and feed to solvent ratio 1:12. The furfural compound is found in the GS-MS analysis and assumed to develop the orange color of the dye.

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