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Optimization of Ultrasonic Assisted Extraction of Antioxidants and Phenolic Compounds from Coleus Using Response Surface Methodology

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Abstract : Free radicals such as reactive oxygen species (ROS) have detrimental effects on human health through several mechanisms. On the other hand, antioxidant molecules reduce free radical generation in biologic systems. Synthetic antioxidants, which are used in food industry, have also negative impact on human health. Therefore recognition of natural antioxidants such as anthocyanins can solve these problems simultaneously. Coleus (Solenostemon scutellarioides) with red leaves is a rich source of anthocyanins compounds. In this study we evaluated the effect of time (10, 20 and 30 min) and temperature (40, 50 and 60° C) on optimization of anthocyanin extraction using surface response method. In addition, the study was aimed to determine maximum extraction for anthocyanin from coleus plant using ultrasound method. The results indicated that the optimum conditions for extraction were 39.84 min at 69.25° C. At this point, total compounds were achieved 3.7451 mg 100 ml^{-1}. Furthermore, under optimum conditions, anthocyanin concentration, extraction efficiency, ferric reducing ability, total phenolic compounds and EC50 were registered 3.221931, 6.692765, 223.062, 3355.605 and 2.614045, respectively.

Keywords : anthocyanin, antioxidant, coleus, extraction, sonication
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