OPTIMIZATION OF DPPH AND ABTS RADICAL SCAVENGING ACTIVITY OF PHALERIA MACROCARPA SEED OIL USING RESPONSE SURFACE METHODOLOGY (FLUIDSCHE-2015-103)

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Abstract

Mahkota Dewa [*Phaleria macrocarpa* (Scheff.) Boerl] belonging to the *Thymelaeaceae* family is one of the well-known traditional herbs in South Asian countries especially in Malaysia and Indonesia. Traditionally, *P. macrocarpa* has been applied to treat liver disease, diabetes mellitus, gout, kidney disorders, cancer, heart disease, impotence, allergies, insect bites, hemorrhoids, strokes, blood-related disease, migraines, acne and skin ailments. Every part of this plant has been used to prevent diseases, with satisfactory results. The seeds have a role in controlling breast cancer, cervical cancer, lung, liver and heart diseases, and the leaves are used for treating impotence, diabetes mellitus, allergies, tumors and blood diseases. The seeds of Mahkota Dewa contained high quality oil with highly unsaturated fatty acids, although seeds are usually being neglected despite of having high quality oil. In this study, conventional extraction was using n-hexane conducted to extract the oil from Mahkota Dewa seed. Response surface methodology (RSM) was employed to describe the influence of temperature, time and solvent-to-feed ratio on DPPH and ABTS free radical scavenging activity of the oil using Box-Behnken Design. The maximum antioxidant activity (%, inhibition) of DPPH and ABTS free radical scavenging activity of the oil extracted were about 77.6% and 60.1%, respectively. Fatty acids were determined by gas chromatography-mass spectroscopy (GC-MS) where the saturated fatty acid and unsaturated fatty acids of the oil were 26.4% and 73.6%, respectively. The major fatty acids were the oleic (C18:1) and linoleic acids (C18:2) which were found to be 43.6% and 36.3%, respectively, which were highest among all five types of fatty acids. Thus, omega-6 containing Mahkota oil of high quality can be obtained in large quanties and thus it has great prospects as nutraceuticals oil.

Key words: Mahkota Dewa, DPPH, ABTS, Seed Oil, Fatty Acid

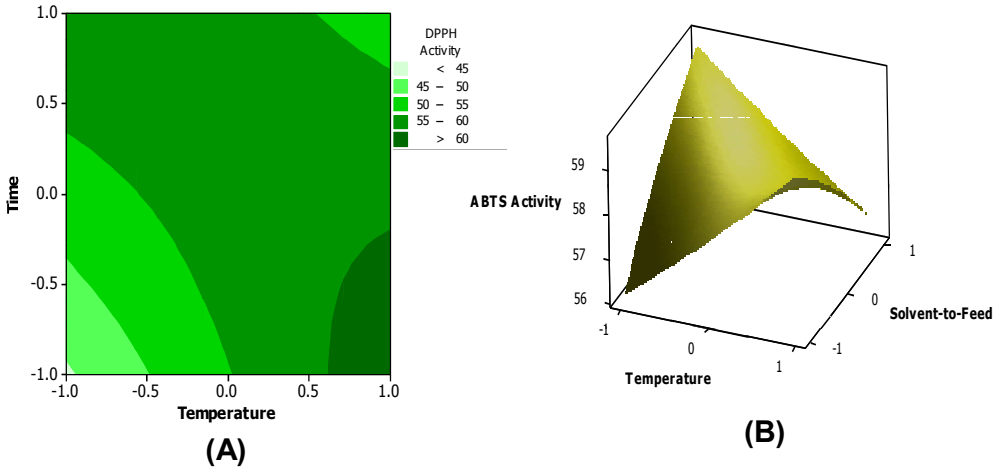

Fig. 1. A)Effect of time and temperature on DPPH inhibition activity of Mahkota dewa oil. B) Surface plot of ABTSradical scavenging activity on the temperature against time.

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