COMPARATIVE STUDY ON POLYPHENOL ANTIOXIDANT ACTIVITY OF HEMPEDU BUMI (*Andrographis paniculata*) CRUDE EXTRACT

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ABSTRACT

This study was aimed to optimized extraction of polyphenols content from Andrographis paniculata investigating ethanol concentration (0 – 100%), extraction time (60 – 100 min), and extraction temperature (25 - 65°C). Assays employed in determination of polyphenols content were total phenolic content (TPC), total flavanoid content (TFC), and condensed tannins content (CTC) while antioxidant capacities were 2, 2’-azinobis-(3-ethylbenzothiazoline-6-sulfonic acid) (ABTS) radical scavenging assay and 2, 2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging assay. Experimental results showed extraction parameters (ethanol concentration, extraction time, and extraction temperature) had significant effect ($p<0.05$) on extraction of polyphenols content and antioxidant capacities. The optimized extraction parameters for polyphenols content (TPC, TFC, and CTC) were 60% ethanol, 65°C, and 60 min at values of 928.03 ± 2.77 mg GAE/100 g DW, 394.85 ± 13.72 mg CE/100 g DW, and 304.42 ± 5.11 mg CE/100 g DW, respectively. Meanwhile, maximum yield of antioxidant capacities (ABTS, DPPH) was extracted by 60% ethanol at 25°C for 60 min with values of 813.89 ± 1.20 μmol TEAC/100 g DW and 1614.90 ± 23.90 μmol TEAC/100 g DW, respectively. CTC as a function to extraction time showed significant positive correlation (0.939) with DPPH. However, polyphenols content (TPC, TFC, and CTC) showed significant negative correlation with ABTS (-0.924, -0.909, and -0.887, respectively) and DPPH (-0.992, -0.938, and -0.928, respectively). Total antioxidant activity for crude polyphenols extract (CPE) obtained at 25°C (13.68 ± 14.27%) and 65°C (31.10 ± 11.68%) was found not comparable with L-ascorbic acid (-8.33 ± 5.73%), α-tocopherol (71.97 ± 7.81%) and BHA (87.80 ± 4.61%) at 200 ppm by using beta-carotene bleaching (BCB) assay. Increasing concentration for CPE obtained at 25 or 65°C (200 ppm – 1000 ppm) showed significant increment in antioxidant activity (13.68 ± 14.27% to 75.08 ± 5.76%). Yield of CPE obtained at 25 and 65°C were 10.81 ± 0.53% and 12.55 ± 0.66, respectively.