ANTIOXIDANT PROPERTIES: EFFECTS OF SOLID-TO-SOLVENT RATIO, DIFFERENT PARTICLE SIZES AND STORAGE PERIODS ON ANTIOXIDANT COMPOUNDS AND CAPACITIES STABILITY OF PEGAGA (*Centella asiatica*)

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ABSTRACT

Storage of plants is often associated with loss of antioxidant compounds and its changes are of particular interest to the food industry. Hence, the objective of this study is to evaluate the effects of solid-to-solvent ratio (1:5, 1:10, 1:15 and 1:20) on the extraction of phenolic compounds (TPC and TFC) and antioxidant capacity (ABTS and DPPH radical scavenging capacity), and the effects of particle sizes (0.08, 0.5, 1 and 2 mm) and storage durations (0, 2, 4, 6, 8 and 10 weeks) on antioxidant compounds and capacities stability of *C. asiatica*. Solid-to-solvent ratio 1:15 was the optimum condition for extraction of phenolic compounds (TPC and TFC) with a value of 967.2 mg GAE/100 g DW and 908.3 mg CE/100 g DW, respectively and exhibited high antioxidant capacities (ABTS and DPPH radical scavenging capacities) with a value of 0.8133 mM and 2.0945 mM, respectively. Highest phenolics and flavonoids yields were obtained from particle size 0.08 mm at 10 weeks storage (1024.62 mg GAE/100 g DW) and 4 weeks storage (945.45 mg CE/100 g DW), respectively. Overall highest ABTS and DPPH radical scavenging capacities were exhibited by particle size 2 mm (0.789 – 0.817 mM) and 0.08 mm (1.737 – 2.182 mM), respectively. Pegaga (*C. asiatica*) powder without storage exhibited highest ABTS and DPPH radical scavenging capacities (0.812 – 0.817 mM and 2.121 – 2.259 mM, respectively) for all particle sizes. TPC was positively correlated with ABTS and DPPH (r=0.808 and r=0.859, respectively) under the effects of solid-to-solvent ratio. Poor insignificant correlations (p>0.05) was found under effects of particle size and storage duration. The overall results suggested the avoidance of storage and milling to 0.08 mm for phenolics extractions and 2 mm for high antioxidant capacities. Further studies can include HPLC analysis to identify specific bioactive compounds in *C. asiatica*.