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IN VITRO ANTIOXIDANT ACTIVITY OF *Caesalpinia sappan* EXTRACT

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ABSTRACT

Numerous diseases have been linked to oxidative stress, in which a disproportion of free radicals in the body leads to tissue or cell damage. Polyphenols are the most abundant antioxidants found in plants, and they are highly effective at scavenging oxidative free radicals. Due to the presence of phenolic compounds in *Caesalpinia sappan* has been discovered to have antioxidant activity. It has several health benefits, the most important of which is preventing cardiovascular and cancer diseases. This study aimed to determine the phenolic content and antioxidant activity of *C. sappan* extract using a variety of antioxidant assays. The extract of *C. sappan* was made using a mixture of solvents (ethyl alcohol: water in ratio 8:2). The total phenolic content of *C. sappan* extract was determined and expressed as gallic acid equivalents using the Folin-Cioucalteu method (GAE). The antioxidant activity of *C. sappan* extract was assessed using the 2, 2-diphenyl-1-picrylhydrazyl (DPPH) free radical scavenging assay and the ABTS radical scavenging capacity assay. An association was found between antioxidant activity and total phenol content. The antioxidant activity of *C. sappan* extract was also determined by DPPH and ABTS assays. The IC50 values for *C. sappan* extract from DPPH and ABTS assays were 54.48 µg/mL ± 0.545 and 25.46 µg/mL ± 0.790, respectively, in the DPPH assay. In the DPPH assay, vitamin C was used as a positive control, whereas Trolox was used as a positive control in the ABTS assay. In conclusion, *C. sappan* extract contains a high level of total phenolics and exhibits significant antioxidant activity. Nevertheless, more research should be done on the antioxidant activity, such as SOD and ROS scavenging assays and in vivo experiments, to determine whether the compound has antioxidant activity. Furthermore, from this experiment, our work can be fundamental information for developing drugs that is used for oxidative stress-related diseases.

Keywords: ABTS assay, Antioxidant activity, *Caesalpinia sappan*, DPPH assay