

Assessment of extraction parameters on antioxidant capacity, polyphenol content, epigallocatechin gallate (EGCG), epicatechin gallate (ECG) and iriflophenone 3-C- β -glucoside of agarwood (*Aquilaria crassna*) young leaves

Abstract

The effects of ethanol concentration (0%–100%, v/v), solid-to-solvent ratio (1:10–1:60, w/v) and extraction time (30–180 min) on the extraction of polyphenols from agarwood (*Aquilaria crassna*) were examined. Total phenolic content (TPC), total flavonoid content (TFC) and total flavanol (TF) assays and HPLC-DAD were used for the determination and quantification of polyphenols, flavanol gallates (epigallocatechin gallate—EGCG and epicatechin gallate—ECG) and a benzophenone (iriflophenone 3-C- β -glucoside) from the crude polyphenol extract (CPE) of *A. crassna*. 2,2'-Diphenyl-1-picrylhydrazyl (DPPH) radical scavenging activity was used to evaluate the antioxidant capacity of the CPE. Experimental results concluded that ethanol concentration and solid-to-solvent ratio had significant effects ($p < 0.05$) on the yields of polyphenol and antioxidant capacity. Extraction time had an insignificant influence on the recovery of EGCG, ECG and iriflophenone 3-C- β -glucoside, as well as radical scavenging capacity from the CPE. The extraction parameters that exhibited maximum yields were 40% (v/v) ethanol, 1:60 (w/v) for 30 min where the TPC, TFC, TF, DPPH, EGCG, ECG and iriflophenone 3-C- β -glucoside levels achieved were 183.5 mg GAE/g DW, 249.0 mg QE/g DW, 4.9 mg CE/g DW, 93.7%, 29.1 mg EGCG/g DW, 44.3 mg ECG/g DW and 39.9 mg iriflophenone 3-C- β -glucoside/g DW respectively. The IC₅₀ of the CPE was 24.6 mg/L.

Keyword: Agarwood (*Aquilaria crassna*) leaves; Epigallocatechin gallate (EGCG); Epicatechin gallate (ECG); Iriflophenone 3-C- β -glucoside; Polyphenol; Antioxidant capacity