

Área: ORG

## Antioxidant activity evaluation of seeds extracts from *Garcinia cochinchinensis* by different methods

Elton Kazmierczak (PG),<sup>1</sup> André Victor Bassani (PG),<sup>1</sup> Christiana Andrade Pessôa (PQ),<sup>1</sup> Cássia Gonçalves (PQ),<sup>1</sup> Romaiiana Picada Pereira (PQ),<sup>1</sup> José Carlos Velloso (PQ),<sup>2</sup>

[kazmierczak.elton@gmail.com](mailto:kazmierczak.elton@gmail.com);

<sup>1</sup>Departamento de Química, UEPG; Programa de Pós-Graduação em Química

<sup>2</sup>Departamento de Análises Clínicas, UEPG; Programa de Pós-Graduação em Química

Palavras Chave: Estresse oxidativo, Antioxidantes, Clusiaceae, Flavonoides.

### Highlights

First report of antioxidant activity of *Garcinia cochinchinensis* seed extracts. Seed ethyl acetate extract (SEE) was the most effective sample.

### Abstract

*Garcinia cochinchinensis* (Clusiaceae) is a fruit native to Vietnam. Extracts from its pulp and leaves have shown antioxidant activity.<sup>1,2</sup> However, few studies have investigated this species cultivated in Brazil. The aim of this work was to evaluate the antioxidant activity of seed extracts from *G. cochinchinensis* grown in Brazil. Dried seeds (162 g) were ground and subjected to sequential extraction with solvents of increasing polarity, yielding the seed dichloromethane extract (SDE) and the seed ethyl acetate extract (SEE). The extracts were analyzed for total phenolic (TPC) and flavonoid contents (TFC), and their antioxidant activities were evaluated by DPPH• and ABTS•+ radical scavenging assays, FRAP, Fe (II) chelation, as well as electrochemical analyses by cyclic voltammetry (CV) and differential pulse voltammetry (DPV) with pH dependence investigation.

Table 1. Results of TPC, TFC and antioxidants activity of seed extracts from *G. cochinchinensis*.

Sample	TPC (mg GA g <sup>-1</sup> )*	TFC (mg QE g <sup>-1</sup> )*	DPPH• IC <sub>50</sub> (µg mL <sup>-1</sup> )*	ABTS•+ IC <sub>50</sub> (µg mL <sup>-1</sup> )*	FRAP (mg AA g <sup>-1</sup> )*	Chelation Fe <sup>2+</sup> (%)*
SDE	64.9 ± 0,2b	14.7±2,16b	195.5 ± 0.9a	127.9 ± 10.1a	20.9 ± 0.8b	22 ± 3 <sup>a</sup>
SEE	115.25 ± 2,3a	49.4±1,43a	37.5 ± 0.4b	46.2 ± 5.4b	30.0 ± 1.4a	11 ± 2 <sup>b</sup>
AA	-	-	6.7 ± 0,2c	4.8 ± 0.1c	-	-

\* Results as mean ± standard deviation (n=3). ANOVA with Tukey's test was applied at a 5% probability level, which means followed by different letters (a-c) differ statistically in the same column. AA = ascorbic acid.

SEE showed higher TPC and TFC values than SDE and better antioxidant activity in scavenging assays and FRAP. SDE (22%) shows highest chelation of Iron II than SEE (11%). Electrochemical analyses confirmed the redox activity of the extracts. For SEE, anodic peaks were observed at 0.27, 0.62, and 0.97 V, while for SDE they appeared at 0.44 and 1.02 V. In DPV, greater sensitivity confirmed these findings, with SEE showing peaks at 0.22 and 0.32 V, and SDE at 0.34 V, close to ascorbic acid (0.35 V). Antioxidant activity was also pH-dependent, with decreasing potentials at higher pH values and maximum activity around pH 6. The results indicate that SEE exhibited superior antioxidant potential overall, while SDE was more effective in Fe (II) chelation. These data highlight the antioxidant relevance of *G. cochinchinensis* seed extracts and support their potential for future applications and investigate the isolation of its constituents.

(1) Kazmierczak, E.; Magalhães, C. G.; Pereira, R. P. *Eclét. Quim.* 2023, 48 (1), 41–54.

(2) Farinazzi-Machado, F. M. V. *et al Rev. Energ. na Agric.* 2017, 32 (4), 393–400

### Acknowledgments

CLabMu, CAPES (88887.753099/2022-00).