

PHENOLIC CONTENT AND ANTIOXIDANT ACTIVITIES OF RAW AND PROCESSED *Artocarpus nobilis* (CEYLON BREADFRUIT) SEEDS IN COMPARISON WITH ALMOND, PISTACHIO AND CASHEW

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Tree nuts are a rich source of phytochemicals, particularly polyphenols are reported in higher concentrations. Nuts are excessively investigated as these compounds directly influence human health. Seeds of *Artocarpus nobilis* are underutilized in Sri Lanka and are yet to be explored for their bioactive properties. This study evaluated the total phenolic content (TPC), total flavonoid content (TFC), and antioxidant activity of raw and processed (roasted, microwaved, and boiled) *A. nobilis* seeds in comparison with almond, pistachio, and cashew. TPC and TFC of methanol extracts were determined by folin-ciocalteu and aluminum chloride colourimetric assay, respectively. Antioxidant activity was determined using the following *in vitro* assays: 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging activity, Trolox equivalent antioxidant capacity (TEAC) by 2,2-azino-bis (3-ethylbenothiazoline-6-sulphonic acid; ABTS), ferric reducing antioxidant power (FRAP), and oxygen radical absorption capacity (ORAC). According to the data, roasted *A. nobilis* seeds had the highest TPC (25.28 ± 0.29 mg of gallic acid equivalent per g of defatted sample) and TFC (20.08 ± 0.42 mg of catechin equivalent per g of defatted sample), while raw-almond seed extract had the lowest. Seeds of *A. nobilis* had significantly higher TPC, TFC, and antioxidant activity than the commonly consumed pistachio, almond, and cashew nuts. Considering the effect of processing, roasting and microwaving significantly ($p < 0.05$) improved the TPC, TFC, and TEAC by ABTS in *A. nobilis* seeds, where boiling reduced it significantly. Strong positive correlations were observed between antioxidant activity measured by ABTS ($r = 0.979$), ORAC ($r = 0.852$), and FRAP ($r = 0.964$) assays with the TPC of the studied samples. These results suggested that phenolic and flavonoids in *A. nobilis* seeds may be responsible for the antioxidant activity of studied seed samples. The current study concluded that *A. nobilis* seeds are a potential source for a natural antioxidant agent.

Keywords: Antioxidant activity, *Artocarpus nobilis*, Phenolic and flavonoid content, Processing method