

Comparison study of therapeutic properties of proteins and secondary metabolites from *Carica papaya*

Abstract

Objective: The current study aims to compare the therapeutic potential of protein extracts and secondary metabolites extracts using methanol, ethyl acetate and hexane from both the fruits and seeds of *Carica papaya*. **Methods:** All of the crude proteins and secondary metabolite fractions extracted from the fruits and seeds of *Carica papaya* were assessed and compared in DPPH free-radical scavenging assay for antioxidant activities and brine shrimp lethality assay for cytotoxic potentials. Protein content was quantified by Bradford assay while total phenolic and flavonoids contents were determined by Folin-Ciocalteu and aluminum chloride colorimetric methods accordingly. Bioactive protein molecules and secondary metabolite fractions were then characterized and analyzed in SDS-PAGE and silica thin layer chromatography respectively. **Results:** Evidence demonstrated that the secondary metabolite extracts of ethyl acetate fraction of the seeds of *Carica papaya* have the highest antioxidant activity (IC₅₀ value of 25.97 µg/ml) as well as cytotoxicity activity (LC₅₀ value of 142.27 µg/ml) in comparison to other crude proteins, methanol or hexane extracts. Notably, crude protein from fruits possesses relatively high antioxidant (IC₅₀ value of 34.62 µg/ml) and cytotoxicity (LC₅₀ value of 222.52 µg/ml) activities. The presence of bioactive phenolic and flavonoid in crude secondary metabolite extracts and bioactive protein molecules in crude protein extracts confer the high antioxidant capacity and cytotoxic potential of *Carica papaya*. **Conclusion:** This study proved that the crude protein from fruits and ethyl acetate fraction from seeds and fruits of *Carica papaya* have great potential to be further developed into therapeutic drugs in future.