

Evaluation of *in-vitro* anti-inflammatory activity of different extracts of *Carica papaya* leaves

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Introduction



Carica papaya L. is a perennial large herbaceous plant and belongs to the family Caricaceae. The plant exhibits many medicinal properties such as anti-inflammatory, anti-cancer, anti-thrombolytic, anti-microbial and antioxidant.

According to the findings of previous studies, *Carica papaya* L. leaves are rich with several phytochemicals such as alkaloids, flavonoids, tannins, phenols, glycosides including cardiac glycosides and saponins. This study was conducted to identify the activity of different extracts of *Carica papaya* L. leaves against inflammatory conditions using *in-vitro* methods.

Methodology

- Fresh mature leaves of *Carica papaya* L. were collected from home gardens of Ihala Egalla, Egalla Grama seva division in Kurunegala district, Sri Lanka.
- Two extracts were prepared; ethanol and aqueous.
- Ethanol extract was obtained by maceration of air-dried leaves (14 days) with 95% ethanol for 72 hours at room temperature and evaporation of the solvent.
- Aqueous extract was obtained from crushing of fresh leaves (900g) with 300ml of distilled water. A part of the filtered aqueous extract was freeze dried.
- Remaining part of the aqueous extract was subjected to sequential fractionation. The resulted hexane, dichloromethane, ethyl-acetate and residual aqueous fractions were evaporated using a rotary vacuum evaporator.
- The extracts were assessed for *in-vitro* anti-inflammatory activity using egg albumin denaturation assay using Diclofenac sodium as the reference drug.
- All the tests were triplicated.

Results

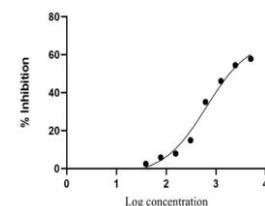


Figure 1: Dose response curve of aqueous extract

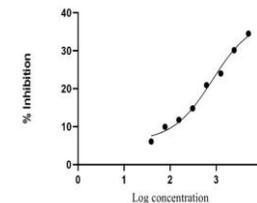


Figure 2: Dose response curve of ethanol extract

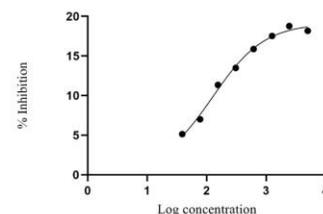


Figure 3: Dose response curve of ethyl acetate fraction

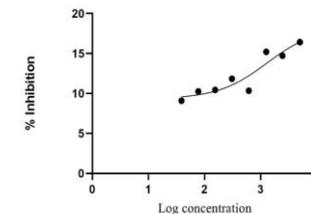


Figure 4: Dose response curve of residual aqueous fraction

Type of extract	IC ₅₀ value mcg/ml
Aqueous extract	643.7
Ethanol extract	829.0
Ethyl acetate fraction	126.5
Residual aqueous fraction	1287.0
Reference drug	1228.0

The IC₅₀ values of aqueous and ethanol extracts of *Carica papaya* L. leaves were less than the IC₅₀ value of the reference drug. Among the fractions of the aqueous extract, only the fractions; ethyl acetate (IC₅₀ = 126.5 mcg/ml) and residual aqueous fraction (IC₅₀ = 1287.0 mcg/ml) showed *in-vitro* anti-inflammatory activity. No anti-inflammatory activity was observed with the hexane and dichloromethane fractions.

Conclusions

The aqueous extract of *C. papaya* leaves possessed higher *in-vitro* anti-inflammatory activity than the ethanol extract. Moreover, the activity was highly retained in the ethyl acetate fraction of aqueous extract of *Carica papaya* L. leaves.