

## Anti-oxidant and Anti-inflammatory Activity of Various Crude Extracts of *Flacourtia inermis* (Lovi) and *Averrhoa bilimbi* (Billin) plants

T Virajini<sup>1</sup>, M Bandara<sup>2</sup>, P Jayasooriya<sup>2</sup>, KW Samarakon<sup>1</sup>, and AI Kuruppu<sup>1#</sup>

<sup>1</sup>Institute for Combinatorial Advanced Research and Education, General Sir John Kotelawala Defence University, Ratmalana, Sri Lanka

<sup>2</sup>Faculty of Technology, University of Rajarata, Mihintale, Sri Lanka

#kuruppu@kdu.ac.lk

### Abstract

*Averrhoa bilimbi* (Billin) and *Flacourtia inermis* (Lovi) plants belong to underutilized fruit plants in Sri Lanka. These plants are comprised of valuable phytochemicals such as flavonoids, and phenolics which can act as anti-oxidants, anti-bacterial, anti-inflammatory and anti-cancer agents. Therefore, in this paper, we hope to focus on a comparative account of the anti-oxidant and anti-inflammatory activity of two varieties of fruit and leaf extracts. The extracts were prepared by three methods where two aqueous extracts were prepared by a hot water (100°C) extraction method and a maceration extraction method. The third extract was prepared by methanol maceration method. Total Phenolic Content was evaluated by Folin Ciocalteu method, while the anti-oxidant activity was determined by DPPH assay (2,2-diphenyl-1-picryl-hydrazyl-hydrate). The anti-inflammatory activity of the extracts was evaluated by human red blood cell membrane stabilization (HRBC) assay and albumin denaturation assay. Out of all extracts, the highest value for total phenolic content was demonstrated by the *F. inermis* fruit macerated water extract:  $340.69 \pm 4.04$  mg GAE/g. When considering the DPPH assay, the hot water extract of *A. bilimbi* fruit and methanol extract of *F. inermis* fruit showed similar inhibition values as 72.60% and 71.49% for 1mg/ml respectively. When considering the anti-inflammatory activity, the water macerated *F. inermis* leaves extract showed the highest inhibition value of 91.44% for 1 mg/ml of the extract by HRBC assay and the water macerated *F. inermis* fruit extract showed the highest inhibition value of 92.30% for 1 mg/ml for the albumin assay as well. These results can be used for further analysis and where novel value-added food supplements could be developed for the local and export markets.

**Keywords:** *Averrhoa bilimbi*, *Flacourtia inermis*, Anti-oxidant activity, Anti-inflammatory activity