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**Evaluation of Antioxidant and Cytotoxic Properties of *Flacourtia indica* (Burm. f.) Merr. Plant Leaf Extracts****Fonseka, W.N.T.\* , Benadict, L.R.D.**

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**Abstract**

*Flacourtia indica* (Burm. f.) Merr. is an indigenous medicinal plant distributed in south and southeast Asian countries. The ethnopharmacological studies revealed that the parts of the plant are used in traditional medicine to treat various diseases and functional disorders. The present study was conducted to investigate the antioxidant and cytotoxic properties of *F. indica* 80% ethanol and ethanol: ethyl acetate (60:40) non-heated and heat-treated leaf extracts. The total phenolic content, total flavonoid content, ferric reducing power and free radical scavenging activity of both non-heated and heat-treated extracts were screened using Folin-Ciocalteu method, Aluminium chloride colorimetric method, ferric reducing antioxidant power assay and 2,2-diphenyl-1-picrylhydrazyl (DPPH) assay respectively. The cytotoxic effects of heat-treated ethanol: ethyl acetate (60:40) extract against *Escherichia coli* cells was determined using 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) cell viability assay. The non-heated 80% ethanol extract showed the highest total phenolic content and total flavonoid content as 253.13±9.52 mg Gallic acid Equivalent (GAE)/g and 13.62±0.36 mg Rutin (RE)/g respectively. Moreover, the heated 80% ethanol extract showed the highest ferric reducing antioxidant power than other extracts, which was 270.75±20.81 mg Ascorbic acid equivalent (AAE)/g. The highest radical scavenging activity was observed in the non-heated 80% ethanol extract with an IC<sub>50</sub> of 205.80±2.45 µg/mL. There was no significant difference in DPPH scavenging activity between non-heated and heat-treated extracts. The ethanol: ethyl acetate (60:40) extract did not show any significant cytotoxic activity where a concentration higher than 1 mg/mL must be used to reach 50% cell viability. According to these results, it is evident that there is higher antioxidant activity in 80% ethanol extract. Preliminary study on cytotoxic activity showed lower cytotoxicity, therefore, more comprehensive studies should be carried out using other extracts. Further research is also necessary to isolate bioactive compounds which could be used as a potential source of biomolecule for the pharmaceutical and food industry.

**Keywords:** *Flacourtia indica* (Burm. f.) Merr., Antioxidant activity, Cytotoxicity, IC<sub>50</sub> values