

Study on the Effect of Heat Sterilization on Bioactivity of *Flacourtia indica* (Burm.f.) Merr. (Uguressa) and *Flacourtia inermis* Roxb. (Lovi) Fruit Juices

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Though underutilized, *Flacourtia indica* Roxb. (Lovi) and *Flacourtia inermis* (Burm.f.) Merr. (Uguressa) of the family Flacourtiaceae are a rich source of biologically active compounds such as phenolics, anthocyanins and hydroxybenzyl alcohol glycosides. Thermal sterilization can be used to increase the shelf life of fruit juices for a considerable period. However, during sterilization, nutritional and bioactive properties can be changed either adversely or favorably. Hence, the current study was focused on the effect of thermal sterilization at 121 °C for 20 minutes, on bioactivity of extracts obtained from sterilized and fresh fruit juice of two fruits. Antioxidant activity was determined using 1-diphenyl-2-picryl-hydrazyl activity (DPPH) radical scavenging power assay which was expressed in IC₅₀. Total phenolic content (TPC) was determined by Folin ciocalteu method and α -amylase enzyme inhibitory activity was determined by Dinitrosalicylic Acid (DNSA) method which was also expressed in IC₅₀ values. Extracts obtained from sterilized juice of *F. indica* shows the highest DPPH radical scavenging activity (IC₅₀ 51.49 \pm 0.6 ppm). The highest TPC value was recorded in the sterilized juice of *F. indica* (85.35 \pm 4.9 mg of gallic acid/g of extract). Thus, antioxidant activities of extracts obtained from the sterilized juice of *F. indica* has increased with the sterilization. This may be due to hydrolysis of polyphenols in both species. The α -amylase inhibitory activity of all the crude extracts was found to be significantly less than that of Acarbose (IC₅₀ 19.85 ppm), which is commonly identified as clinical drug for hyperglycemia. However, α -amylase inhibitory activity of the juice of both fruits was further reduced upon sterilization. Possible reason may be the α -amylase inhibitory activity might have related to heat liable compound. In conclusion, consuming the thermally sterilized juice of *F. inermis* and *F. indica* will provide benefits in human diets as a rich source of natural antioxidant and phenolic compounds. However, α -amylase inhibitory activity of the juice of both fruits was further reduced upon sterilization.

Keywords: Antioxidant, α - amylase inhibitory assay, *Flacourtia indica*, *Flacourtia inermis*, Total phenolic content