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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±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*, *Flacourtic inermis*, Total phenolic content

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Keywords: Bulk cocc Polymerization

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