

DETERMINATION OF TOTAL PHENOLIC CONTENT AND ANTIOXIDANT CAPACITY OF FOUR YAM CULTIVARS

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The necessity of exploring nutritional value of traditional food and upgrading their consumption to combat the diseases is imperative. The objectives of the current study was to estimate the total phenolic content and antioxidant capacity of raw and boiled forms of four cultivars of *Dioscorea alata* L. including *Ini ala*, Jaffna purple, *Dandila* and *Hingurala*. Total phenolic content was determined by Folin ciocalteu method and antioxidant capacity was determined by Trolox–equivalent antioxidant capacity and 2,2-diphenyl-1-picrylhydrazyl scavenging assays. Among raw forms, total phenolic content was highest in *Ini ala* (1314±65 GAE/100 FW) followed by *Dandila* (572±51 GAE/100 FW), Jaffna purple (252±17 GAE/100 FW) and *Hingurala* (204±7 GAE/100 FW). Whilst among boiled forms, *Dandila* had the highest total phenolic content (686±30 GAE/100FW) followed by *Ini ala* (345±24 GAE/100 FW), Jaffna purple (320±54 GAE/100 FW) and *Hingurala* (125±34 GAE/100 FW). As per Trolox antioxidant assay, *Ini ala* showed the highest antioxidant capacity (302±42 TEAC) among the raw yams. It was reflected in 2,2-diphenyl-1-picrylhydrazyl scavenging assay giving the IC₅₀ value of 164.3±1.6 ppm, while showing the IC₅₀ value of 4.5±0.19 ppm for ascorbic acid. However, in the boiled forms, *Dandila* exhibited the highest antioxidant capacity in both Trolox assay (275±39 TEAC) and 2,2-diphenyl-1-picrylhydrazyl scavenging assay (IC₅₀ 453.8±88.3 ppm). *Hingurala* gave the lowest antioxidant capacities in both raw and boiled forms (49±15 and 34±17 TEAC) respectively. Boiling resulted significant decrease ($p<0.05$) in total phenolic content and antioxidant capacity of *Ini ala*, whilst these parameters significantly increased ($p<0.05$) with *Dandila*. A significant positive correlation ($p<0.05$) was obtained between the total phenolic content and antioxidant capacity in both raw and boiled forms of the four cultivars. In conclusion, boiling has made a significant effect on the total phenolic content and antioxidant capacity of yam cultivars. Tested yams exert a potential barrier against initiation of non-communicable diseases and their cultivation would bring positive effects on health and economy.

Keywords: Antioxidant capacity, Boiled, Raw, Total phenolic content, Yam cultivars