IDENTIFICATION AND QUANTIFICATION OF POLYPHENOLIC COMPOUNDS IN SOURSOP (*Annona muricate* L.) CULTIVATED IN SEVEN AGRO-ECOLOGICAL ZONES IN SRI LANKA

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Soursop is known as antioxidant rich fruit mainly due to the diverse polyphenolic compounds. This study aimed to identify these polyphenolic compounds of soursop cultivated locally. The ripened and defects-free soursop fruits were collected from forty nine (49) locations of seven agro-ecological zones (AEZs) in Sri Lanka during April to May harvesting season in 2022. The polyphenolic compounds were extracted using 0.1% HCl in methanol from lyophilized fruit pulp. The detection of polyphenolic compounds was carried out using HPLC (RP; C18 column at 25°C; mobile phase-0.5% acetic acid (v/v) and 2% acetic acid (v/v) in methanol; run time-60 min; flow rate-0.4 mL min^{-1}) under the wavelength of 280 nm at UV-Vis range. Polyphenolic acids namely tannic, salicylic, coumaric, chlorogenic, gallic, and syringic along with catechin, quercetin and vanillin were used as the reference standards. According to the results, tannic acid (359.17±32.62 ppm) was found as the predominant polyphenol and the significantly highest ($p<0.05$) value was reported in the upcountry wet zone. Other than that, significantly higher ($p<0.05$) amounts of salicylic acid (2.94±0.03 ppm) and chlorogenic acid (1.40±0.31 ppm) were reported in the upcountry wet zone. The significantly highest ($p<0.05$) coumaric acid (1.54±0.15 ppm) and vanillin content (0.76±0.09 ppm) was observed in the upcountry intermediate zone. The lowest amounts of tannic acid (231.93±18.36 ppm), salicylic acid (1.96±0.24 ppm), chlorogenic acid (0.43±0.13 ppm), coumaric acid (0.70±0.13 ppm), and vanillin (0.02±0.01 ppm) were reported from the mid-country wet zone, mid-country intermediate zone, mid-country wet zone, low-country dry zone, and mid-country intermediate zone, respectively. However, catechin, gallic acid, quercetin, and syringic acid were not detected in any AEZs. In conclusion, the strength of polyphenolic compounds in soursop varies significantly across the AEZs.

Keywords: Antioxidant activity, Polyphenol, Tannic acid, Upcountry wet zone