PHYSICAL, CHEMICAL AND MORPHOLOGICAL CHARACTERISTICS OF ARECA NUT (*Areca catechu* L.) SEEDS IN SRI LANKA

D.M.T.U Dissanayake[1], T. Liyanage[2], W.A.G.E. Wijelath[1] and W.A.D. Nayananjalie[1]

[1]Department of Animal and Food Sciences, Faculty of Agriculture, Rajarata University of Sri Lanka, Anuradhapura, Sri Lanka.
[2]Post-harvest Technology Division, Central Research Station, Department of Export Agriculture, Matale, Sri Lanka.

Dried areca nut is exported from Sri Lanka. This has been negatively affected by the illegal adulterations of dried areca nut of other origin in re-exportation. The present study aimed to analyse the chemical, physical and morphological characteristics to recognize Sri Lankan origin dried areca nuts. Fresh, ripened areca nuts were collected from 15 locations in *Matale*, *Kandy*, *Kegalle*, *Gampaha*, *Kurunegala*, *Kalutara*, *Matara*, *Rathnapura*, *Badulla*, *Ampara*, and *Vavuniya* districts. Chemical (tannin, flavonoid, alkaloid, crude fat, crude fibre, ash), physical (average weight, length, diameters, density) and morphological (colour, shapes of nuts, surface network and polyphenolic vein patterns) characters were determined and evaluated the differences in analysis of variance. The results revealed that there were significant differences ($p<0.05$) in all physical characters, chemical parameters (except total ash and insoluble ash contents) and colour composition. Average contents (%) of total ash, acid insoluble ash, crude fat, fibre and total tannin were 1.58 ± 0.31, 0.24 ± 0.14, 14.32 ± 3.23, 47.69 ± 5.58, and 33.91 ± 7.02, respectively. The average flavonoid and alkaloid were 9.16 ± 2.08 mg quercetin g^{-1}, and 0.41 ± 0.51 mg atropine equivalents g^{-1} separately. Further, the average weight, length and true density were 5.77 ± 1.08 g, 2.14 ± 0.16 cm, and 1103.70 ± 52.00 kgm^{-3}, respectively. The most common shape of areca nut was oblong followed by ellipsoid. A similar polyphenolic vein pattern and characteristic central white core were seen in all locations. A slight variation of surface network pattern with honeycombed shape was observed between locations. Further, the microscopic view of powdered areca nut samples of each location had a similar appearance. In conclusion, the local origin areca nuts had considerable variation in chemical and physical properties. However, the local origin areca nuts of all locations had similar morphological features, except the colour composition.

Keywords: Areca nuts, Physicochemical properties, Polyphenolic vein pattern, Shape