Free amino acid profile of *Caryota urens* L. (Kithul palm) treacle as a marker for authenticity

H.P.P.S. Somasiri[1], G.A.S. Premakumara[1], K.R.R. Mahanama[2]

[1]Industrial Technology Institute, 363, Bauddhaloka Mawatha, Colombo 7. [2]Department of Chemistry, University of Colombo, Colombo 3.

In Sri Lanka, traditionally, treacle made from *Caryota urens* L., *Cocos nucifera*, *Saccharum officinarum* and *Borassus flabellifer* saps are used as natural sweeteners. However, the methods used for the identification of different treacle type are based on characteristic taste and aroma and both are subjective parameters. In this study, free amino acid profiles of *C. urens* (n = 17), *C. nucifera* (n = 6), *S. officinarum* (n = 10) and *B. flabellifer* (n = 6) treacle were analyzed. Automated online derivatization of primary amino acids with o-phthalaldehyde (OPA) and secondary amino acids with 9-fluorenylmethyl chloroformate (FMOC) was carried out and were separated on a Sorbex Eclipse AAA (4.6x150 mm, 5 μm) analytical column and were detected at the excitation wavelength of 340 nm and emission wavelength of 450 nm. Each individual amino acid was determined with a linear calibration curve constructed with external standards series in the concentration range of 10 pmol/mL to 250 pmol/mL.

Results showed that *C. urens* treacle contins 73 ± 12 glutamate, 71 ± 8 serine, 52 ± 5 asperagine, 50 ± 7 argnine and 38 ± 6 aspartate as the major amino acids in mg/100g. Other minor amino acids present were histidine (28 ± 3), glycine (8 ± 1), threonine (4 ± 0.5), alanine (18 ± 3), tyrosine (8 ± 1), cystine (17 ± 2), methionine (7 ± 1), phenylalanine (5 ± 1), isoleucine (15 ± 2), leucine (3 ± 0.5), lysine (3 ± 0.2) and proline (12 ± 1) mg/100g respectively. Interestingly, primary amino acid valine was absent in the *C. urens* treacle.

In conclusion, free amino acid profile can be used to identify the type of treacle. This can be recommended as an analytical technique in the identifican which is far superior than the subjective method based on the taste and aroma. Also this is the first report on the amino acid profile of *C. urens* treacle.

Acknowledgement

Financial support from Treasury Grant No. 10719/TG 1o is acknowledged.