605/E2

Study on physico-chemical properties and fatty acid profile of Sri Lankan groundnuts (*Arachis hypogaea* L.)

L.H.A.G. Wathsala,[1] H.M.T. Herath,[2] and M.A.J. Wansapala[1]

[1]*Department of Food Science, Faculty of Applied Sciences, University of Sri Jayawardenapura*
[2]*Food Technology Section, Modern Research & Development Complex, Industrial Technology Institute, Halbarawa Gardens, Malabe*

Groundnut **(***Arachis hypogaea* L.) is an oil seed belongs to legume crops, which is mostly used in snacks and confectionary industry. The demand for the groundnuts highly depends on its quality attributes, nutritional composition and the stability of oil, which determine the keeping quality of groundnuts. Hence, the objective of this study was to determine the physio-chemical properties and fatty acid profiles of groundnuts grown in Sri Lanka with an intension of selecting the best variety or the accession for large scale production. Physical attributes (Pod length, seeds per pod, seed size, shape, seed testa color and weight of 100 seeds), proximate composition and fatty acid profiles were carried out for 6 groundnut varieties and 6 promising accessions developed at Angunakolapelessa (GLORDC). The proximate composition was determined in accordance to A.O.A.C official methods specified in 2012 for nuts. The fatty acid profile of each variety and the lines were determined by a gas chromatographic technique according to SLS 313 part 4/section 1:2010, which is adopted from the ISO method specified in 2000 (ISO 5509:2000-E). The moisture content of samples significantly varied from 5.04% to 7.79% (p<0.05). The ash content, crude protein and crude fat content were 2.43% - 3.20 %, 24.09% -33.27%, and 42.47% - 50.81%, respectively, on dry basis, and showed a significant difference among all varieties and accessions (p<0.05). The crude fiber content varied from 2.33% to 3.97% on dry basis and no significant difference (p=0.205) was observed among them. The total carbohydrate content varied from17.14% to 21.53%. Oleic (C18:1), Linoleic (C 18:2), Palmitic (C 16:0), Stearic (C 18:0), Arachidic (C 20:0), Gadoleic (C 20:1), Behenic (C 22:0) and Lignoceric (C 24:0) are the major fatty acids identified, and the composition was 38.14 %- 59.22 %, 23.97% -39.48%, 14.72% -8.99%, 2.26%- 4.36%, 1.07% - 1.80%, 0.73% -1.09%, 0.88% -2.86%, and 0.49%- 1.49%, respectively, with significant differences (p<0.05) among all. The ratio of oleic to linoleic acid predicts the stability of oil,and this was in the range 0.97%-2.41% and showed an inverse correlationship between them (correlation coefficient R^2 =-0.988). SFA, MUFA, PUFA and USFA vary within the range of 15.24% - 21.56%, 38.93%-60.18%, 24.59%-39.48%, and 84.76% -78.14% respectively. According to the physical attributes and fatty acid profile, the most suitable variety for the confectionary industry and as a snack is Walawa, and promising lines for further breeding are 98396 × Red Spanish, 98396 ×10663, ICGV 05200, and ICGV 05198.

Keywords: Groundnut, varieties, accessions, Proximate composition, fatty acid profile.

Acknowledgement: Financial assistance by Treasury Grant (TG15/101).

theja@iti.lk +94 112797342