EVALUATION OF THE OPTIMAL TEMPERATURE AND DURATION OF ROASTING OF SESAME (*Sesamum indicum*) SEEDS FOR MANUFACTURING SESAME OIL

S.A.H. Dulmini[1], I.R. Liyanage[2] and D.W.M.M.M. Kumari[1]

[1]Department of Animal and Food Sciences, Faculty of Agriculture, Rajarata University of Sri Lanka, Anuradhapura, Sri Lanka.
[2]Grain Legumes and Oil Crops Research and Development Centre, Angunakolapelessa, Sri Lanka.

This study was conducted to determine the optimum temperature and duration of roasting sesame (*Sesamum indicum*) seeds belong to ANKBS1 breeding line to produce high quality sesame oil. Proximate composition of sesame seeds was determined. Sesame oil was prepared from seeds roasted at different temperatures (120, 150 and 180°C) and time (15, 30, 45 and 60 minutes) combinations. The experiment was arranged in a completely randomized design with 3 replicates. Unroasted sample was used as the control. Free fatty acid content (FFA), moisture content (MC), peroxide value (PV), refractive index (RI), total phenolic content (TPC), antioxidant activity (AA), oil yield and color of the oil was analyzed. The FFA, RI and PV of oil were measured after one month of storage at room temperature. The MC, ash, crude protein, crude fibre, crude fat and carbohydrate content of seeds were 10.73%, 5.75%, 17.27%, 13.4%, 39.7% and 13.15%, respectively. The FFA was the highest *($p<0.05$)* at 180°C roasted for 45 and 60 minutes (0.84 ± 0.00% and 0.86 ± 0.00% respectively) whereas roasted at 120°C for 15 minutes resulted in (0.54 ± 0.01%) the lowest *($p<0.05$)*. Oil yield was increased, and MC was decreased *($p<0.05$)* with increasing roasting temperature and time. The highest *($p<0.05$)* PV was resulted (10.19 ± 0.25 mmol kg^{-1}) in 120°C 60 minutes, and the lowest *($p<0.05$)* was recorded (2.80 ± 0.09 mmol kg^{-1}) in unroasted seed oil. The TPC was the highest *($p<0.05$)* at 180°C roasting temperature for 45 minutes and 150°C for 30 minutes. The highest *($p<0.05$)* AA was recorded at 150°C for 30 minutes. The lightness and hue of the oil decreased *($p<0.05$)* with increasing temperature and time. FFA and PV increased *($p<0.05$)* and RI remained constant after one-month storage period. The roasting at 180°C for 45 minutes show beneficial effects on PV, TPC, MC and oil yield.

Keywords: Proximate composition, Roasting, Sesame oil, Sesame seeds