

Comparison of Phenolic and Antioxidant Activity of Selected Raw Pulses with Under Cooking Conditions

S.A.H.N. Samarasinghe¹ and A. Vengadaramana²

¹Department of Biosystems technology, Faculty of Technology,
University of Jaffna, Sri Lanka.

²Department of Botany, Faculty of Science, University of Jaffna, Sri Lanka.

* vengad@univ.jfn.ac.lk

Pulses play a vital role in the Sri Lankan diet as a protein source. Pulses contain bioactive compounds such as phenolic compounds, tannins and flavonoids. Cooking causes considerable changes in the nutritional and structural properties of the phenolic compounds and antioxidants of pulses. The objective of this work was to compare the total phenolic content and antioxidant activity of selected raw pulses such as yellow dhal (*Cajanus Cajan*), red dhal (*Lens culinaris*), red cowpea (*Vigna unguiculata*), ash cowpea (*Vigna unguiculata*), green gram (*Vigna radiata*), black gram (*Vigna mungo*), soybeans (*Glycine max*), chickpea (*Cicer arietinum*) with traditional cooked and pressure-cooked ones. Total phenolic content of raw soybeans, red dhal, ash cowpea, red cowpea, green gram, black gram and chickpea were 248.5 ± 1.85 , 25.79 ± 1.18 , 47.45 ± 1.02 , 59.54 ± 1.86 , 33.08 ± 1.66 , 43.08 ± 1.32 and 150.79 ± 1.62 μgmL^{-1} respectively. Ash cowpea (204.95 ± 1.41 μgmL^{-1}) and red cowpea (205.79 ± 1.17 μgmL^{-1}) showed higher amount of total phenolic content when they were cooked traditionally. Traditional and pressure cooking methods increased the total phenolic content in all the pulses tested except soybeans and chickpea compare to raw pulses significantly. Traditional and pressure-cooking methods increased the tannin content in ash cowpea, red cowpea, green gram and black gram whereas decreased in yellow dal red dhal, soybeans and chickpea when compared to raw samples. High amount of tannin content was observed in soy beans (2.50 ± 0.001 μgmL^{-1}). Total phenolic and tannin contents were higher in ash cowpea, green gram and black gram when they were cooked by pressure cooking than traditional cooking. High amount of flavonoid was observed in raw sample of red cowpea (82.13 ± 1.38 μgmL^{-1}) and lower amount was observed in soy beans (14.75 ± 1.12 μgmL^{-1}). The significant depletion of flavonoid content was observed in all cooked samples compare to raw samples. There were no significant differences among the raw and cooked samples of pulses in terms of total sugar and different cooking methods did not affect the total sugar. The study recommended that pressure cooking was the suitable method for retaining maximum total phenolic content and tannin content in the pulses followed by traditional cooking.

Keywords: Antioxidants, Bioactive, Flavonoids, Malnutrition, Phenolic, Pulses, Tannin