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Antioxidant potential of traditional kurakkan (*Eleusine coracana*) thalapa meal and kollu (*Macrotyloma uniflorum*) curry

K.G. Wijesinghe and S. Ekanayake

Department of Biochemistry, Faculty of Medical Sciences, University of Sri Jayewardenepura

Antioxidants play an important role in the body's defense system against reactive oxygen species (ROS), the harmful by-products generated during normal cell aerobic respiration. This study aimed to assess the antioxidant potential of Kurakkan (*Eleusine coracana*) thalapa meal and of kollu (*Macrotyloma uniflorum*) curry given as an accompaniment and of raw flour of both Kurakkan and Kollu. DPPH radical scavenging activity, ABTS radical cation decolouration activity, and total phenolic content (TPC) by Folin-Ciocalteau assay were used to determine the antioxidant potential. Total phenolic content was determined with both methanol and phosphate buffer (pH 7) extracts (2.5 g extracted with 35 mL of methanol or buffer for 30 min).

In both ABTS and DPPH assays, phosphate buffer extractions showed significantly ($p < 0.05$) higher antioxidant activity than the methanolic extracts (low IC_{50} values). Phosphate buffer extracts of both samples showed significantly greater ($p < 0.05$) inhibitory activity against ABTS radicals than the DPPH radicals when compared with the standard, Trolox (2.9 ppm) and ascorbic acid (2.7 ppm) respectively. When considering raw flour and the cooked meals, the raw flour (both Kurakkan and Kollu) had significantly higher ($p < 0.05$) antioxidant activity than the phosphate buffer extractions (low IC_{50} values), thus indicating heating may be detrimental to the antioxidant compounds present in these raw flours. The total phenolic content of both methanolic and phosphate buffer extracts were lower when compared with standard Gallic acid indicating the contribution to antioxidant potential by both these food items may not be very high. Table 1 below shows the summary of the results of Total phenolic and antioxidant potential of the cooked and raw kurakkan and kollu.

Table 1: Total phenolic and antioxidant potential of the cooked and raw kurakkan and kollu

		TPC	Antioxidant potential	
		GAE equivalents	DPPH IC_{50} value (ppm)	ABTS IC_{50} value (ppm)
Kurakkan flour	**Methanol**	1.28	20.6 ^{b}	1621 ^{c}
	Phosphate buffer	1.94	9.7 ^{c}	461 ^{a}
Kurakkan thalapa	**Methanol**	1.28	40 ^{a}	4874 ^{a}
	Phosphate buffer	1.04	19 ^{a}	405 ^{b}
Kollu flour	**Methanol**	0.93	16 ^{c}	2426 ^{b}
	Phosphate buffer	0.87	7 ^{d}	474 ^{a}
Kollu curry	**Methanol**	0.80	37 ^{a}	1621 ^{c}
	Phosphate buffer	1.16	17 ^{b}	482 ^{a}

Keywords: Kurakkan, Kollu, Antioxidant, DPPH (2, 2- diphenyl-1-picrylhydrazyl), ABTS (2, 2'-azinobis (3-ethylbenzothiazoline 6-sulfonate)), Total phenolic content (TPC)

kith1991@yahoo.com

Tel: +94773994427