

Nutraceutical evaluation and antioxidant potential of red kidney bean (*Phaseolus vulgaris*) and chickpea (*Cicer arietenum*) seed coats

ABSTRACT

Legumes have become increasingly in demand due to the rich nutrient compositions and phytochemicals of pulses. However, the seed coats of some legume food products were removed prior consumption causing the food loss its nutritional value. The red kidney bean, RKB (*Phaseolus vulgaris*) and chickpea, CP (*Cicer arietenum*) which are the common beans among population were investigated in this study. Seed coats of these beans were analysed for the nutritional composition, phenolic compound and antioxidant properties. Carbohydrate was the major macronutrient in both seed coats. RKB and CP seed coats showed statistically significant composition of moisture, fat, protein and fibre. The caloric value of RKB seed coat (2.63 kcal/g) is higher than CP seed coat (2.29 kcal/g). Nevertheless, CP seed coat is a better source of fibre (27%) than RKB seed coat. Total phenolic content (TPC) of RKB seed coat was 12.14 mg GAE/g, which is much higher than in CP seed coat (0.25 mg GAE/g). Interestingly, the seed coat of RKB has strong antioxidant potency with DPPH assay ($IC_{50} = 105.18 \mu\text{g/ml}$) comparable to standard Trolox ($IC_{50} = 96.42 \mu\text{g/ml}$), which is much lower than the seed coat of CP ($IC_{50} = 606.12 \mu\text{g/ml}$). In addition, the antioxidant activity was highly correlated with TPC content of both seed coats. These properties make the seed coat of both beans are excellent candidates of potent nutraceutical.

Keyword: Antioxidant; Chickpea bean; Nutritional composition; Phenolic compounds; Red kidney bean