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Abstract

Nutritional, Compositional and Antioxidant Properties of Tropical Almond (*Terminalia catappa*) Press Cake†

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Abstract: Food processing industry generates great volume of economically valuable waste. The protein rich press cake produced during the screw press extraction of tropical almond (*Terminalia catappa*) is also a potential ingredient in numerous food items. This study aimed to utilize tropical almond press cake (TAPC) as a potential ingredient in food products having the concern on zero waste concept of circular economy. The TAPC was dried at 60°C and pulverized using micro-pulverizer. The proximate composition, gluten content and elemental composition was analyzed by AOAC 2005 method, wet gluten test and ICP-MS respectively. Further, Scanning Electron Micrograph (SEM) structure, bioactive compounds and antioxidant capacity of the TAPC were evaluated. According to the proximate data, the TAPC showed high protein content (41.94±1.22) with 6.80±1.01, 6.99±0.78, 8.66±0.89, 5.71±1.48 and 28.90±0.79 g/100 g of moisture, ash, crude fat, crude fiber and carbohydrate respectively. The TAPC showed 335.52±1.87 kcal/100 g of calorific value and zero gluten content. Further, the TAPC showed high K (189.25) and Ca (618.75) content with 70.62, 43.52,12.30 mg/100 g of Na, Fe and Zn respectively. The irregular shaped unevenly distributed starch molecules were visible in SEM image of the TAPC and their surfaces were not smooth. The total phenolic (136.83 mg GAE/100 g) and flavonoid content (188.63 mg QE/100 g) of the TAPC were significantly higher compared to the tropical almond nut (64.31 mg GAE/100 g and 133.8 mg QE/100 g). Moreover, TAPC showed high antioxidant activity with an IC_{50} of 37.86±3.44 mg/ml for DPPH, 8.24±1.23 mg/ml for ABTS, and a reducing power of 402.50±0.33 mM Trolox eq/100 g in FRAP assays. Hence, the TAPC could be a high protein, gluten free ingredient with potential nutritional and antioxidant properties to be used in food products.

Keywords: Tropical almond, Press cake, Proximate composition, Mineral composition, Scanning Electron Micrograph, Antioxidant activity

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