

## Influence of Sprouting Duration on the Nutrient, Functional, and Phytochemical properties of Tiger nut flour and Bread

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### Abstract

The influence of sprouting on tiger nut's (TN) nutritional, functional, and phytochemical quality was examined, and the flour used for bread making to evaluate the feasibility as a functional ingredient. TN was sprouted and sampled at 3 days intervals for 12 days, dried and milled into flour and analyzed. Subsequently, 25% of wheat flour (WF) was replaced with the 9 days-sprouted TN flour for bread. Sprouting for 9 days increased the protein content from  $9.19 \pm 0.04$  to  $9.79 \pm 0.15$  g/100 g dry matter (DM), fiber from  $6.75 \pm 0.16$  to  $9.27 \pm 0.44$  g/100 g DM, and ash from  $2.34 \pm 0.10$  to  $2.70 \pm 0.06$  g/100 g DM but decreased fat content from  $26.10 \pm 0.18$  to  $23.18 \pm 0.43$  g/100 g DM and soluble sugar from  $33.13 \pm 1.25$  to  $23.75 \pm 1.44$  °Bx. We observed increases in the polyphenols ( $94.16 \pm 6.43$ – $214.23 \pm 6.98$  mg GAE/100 g) and ascorbic acid ( $26.66 \pm 0.17$ – $65.13 \pm 0.19$  mg AE/100 g) and decreases in the cyanogenic glycosides ( $273.79 \pm 0.37$ – $231.54 \pm 3.53$  mg/100 g) and oxalates ( $19.04 \pm 1.14$ – $5.65 \pm 0.93$  mg/100 g) contents. Sprouting decreased the particle size and increased the water retention and swelling power of TN flour. WF bread was described as stretchy, sweet, and creamy, whereas sprouted TN bread was brown, nutty, and wheat-like. Consumer acceptance for the sprouted TN bread was comparable to WF bread, showing the possible application in bread making.

**Keywords:** Bread, consumer acceptability, sprouting duration, tiger nut

