

## **Development of protein rich pregelatinized whole grain cereal bar enriched with nontraditional ingredient: Nutritional, phytochemical, textural, and sensory characterization**

### **ABSTRACT**

This study was aimed to use extrusion cooking as a pretreatment for non-conventional seeds (Indian horse chestnut flour) to blend them with whole grain flours (whole wheat flour, whole barley flour, and whole corn flour) for the development of a pregelatinized cereal bar (PCB). In this study, date paste (7.5–17.5%) and walnut grits (2.5–12.5%) were incorporated at varying levels to prepare PCB. The PCB was evaluated for its nutritional, color, textural (both three-point bending test and TPA), antioxidant activity, and sensory attributes. The flexural modulus, rupture stress, and fracture strain of PCB increased with the incorporation of a higher proportion of date paste. The protein and fiber content in PCB increased from 7.74 to 9.13% and 4.81 to 5.59% with the incorporation of walnut grits and date paste, respectively. The DPPH, total phenolic content, and water activity of PCB were determined, which progressively enhanced with increased levels of walnut grits and date paste. The correlation between sensory attributes and instrumental texture on PCB was also investigated. The correlation results showed a significant ( $p < 0.05$ ) positive correlation between texture analysis and sensory hardness, springiness, adhesiveness, and negatively correlated to instrumental and sensory cohesiveness. For sensorial attributes, all PCB samples presented average scores of 7/10 and 4/5 for buying intention. Therefore, whole grain extrudates, date paste, and walnut grits can be efficiently used to develop PCB with improved nutritional, nutraceutical, and economic values.