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Evaluation of physico-chemical, functional, fiber and antioxidant properties of roasted wheat bran for value addition

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Objective: To evaluate the effect of Roasting with different methods on physicochemical, Functional, Antioxidant and Crude Fiber properties of roasted wheat bran.

Methodology: Physico-chemical composition, Functional properties, Antioxidant Activity, SEM, XRD, FTIR, Color and Crude Fiber properties were evaluated.

Result & Discussions: The present investigation highlighted the effects of roasting of wheat grains at different levels of Time and Temperature combinations on the physicochemical and functional properties of roasted wheat bran from HD-2967 variety. Bran of Roasted wheat grains showed increased Ash content, Bulk Density, Water absorption capacity, Water solubility index and, whereas Moisture content, Oil absorption capacity, Antioxidant activity and L*,a*,b* values were decreased with the effect of higher heat trends on roasting. SEM provides the clear view of changes in scattered granules in roasted wheat bran, protein matrix and adhesive protein areas attached to starch is clearly seen. XRD of brain samples was measured at room temperature using a D8 Advance Bruker X-ray diffractometer (Germany), the crystalline and amorphous areas were quantified using EVA software. FTIR reveals ultra-structural chemical features of protein secondary structures of wheat bran effected by roasting. Crude fiber ranged from 12.1, 15.2, 18.3 % in Hot air oven roasted while 12.7, 16.3, 20.2% in Halogen oven roasted samples at 140oC, 160oC, 180oC for 30 mins respectively. The traditionally roasted wheat bran sample has 8.0% CF which was the lowest of all.

Conclusion: The roasting of wheat in both hot air and halogen oven at 3 different time-temperature combinations showed the significant difference but do not much difference in comparative treatments. Roasted wheat bran has an excellent perspective for inclusion in human food products as a purposeful ingredient in terms of high fiber intake to alleviate numerous diseases.

Biography

Amandeep Singh is a Research Scholar in Department of Food Science & Technology, Guru Nanak Dev University, Amritsar (INDIA), He have completed his masters in 2014, Then he cracked ASRB-NET exam and move towards research. Currently, he is a UGC-RGNF fellow. His broad area of research is the characterization of cereals fiber by applying diverse treatments for physicochemical & functional changes for value-added healthy products.

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