Effect of Extrusion Variables (Temperature, Moisture) on the Antinutrient Components of Cereal Brans

S. Kaur, S. Sharma, B. Singh and B. N. Dar

Department of Food Science and Technology, Punjab Agricultural University, Ludhiana and Department of Food Technology, Islamic University of Science and Technology, Awantipora, Jammu and Kashmir, India


The study was carried out, to explore the potentiality of extrusion technology for elimination of antinutritional components of cereal brans. Extrusion variables were moisture content (14, 17 and 20 %) and temperatures (115 °C, 140 °C, 165 °C). Phytic acid, polyphenols, oxalates, trypsin inhibitor, bulk density and color of brans after extrusion were analyzed. All four raw bran samples had high concentration of phytic acid, polyphenols, oxalates and trypsin inhibitors. Extrusion cooking was found effective in reduction of these antinutrients. Extrusion processing reduced the phytic acid by 54.51 %, polyphenol by 73.38 %, oxalates by 36.84 %, and trypsin inhibitor by 72.39 %. The heat treatment caused the highest reduction in polyphenols followed by trypsin inhibitors, phytic acid and oxalates. The highest reduction in antinutrients was observed at 140 °C and 20 % moisture content. Bulk density increased significantly compared to raw brans and increase in redness and decrease in yellowness of brans was observed after extrusion treatment.