

Preparation of Corn Flour Based Extruded Product and Evaluate Its Physical Characteristics

Authors : C. S. Saini

Abstract : The composite flour blend consisting of corn, pearl millet, black gram and wheat bran in the ratio of 80:5:10:5 was taken to prepare the extruded product and their effect on physical properties of extrudate was studied. The extrusion process was conducted in laboratory by using twin screw extruder. The physical characteristics evaluated include lateral expansion, bulk density, water absorption index, water solubility index, rehydration ratio and moisture retention. The Central Composite Rotatable Design (CCRD) was used to decide the level of processing variables i.e. feed moisture content (%), screw speed (rpm), and barrel temperature (°C) for the experiment. The data obtained after extrusion process were analyzed by using response surface methodology. A second order polynomial model for the dependent variables was established to fit the experimental data. The numerical optimization studies resulted in 127°C of barrel temperature, 246 rpm of screw speed, and 14.5% of feed moisture as optimum variables to produce acceptable extruded product. The responses predicted by the software for the optimum process condition resulted in lateral expansion 126 %, bulk density 0.28 g/cm³, water absorption index 4.10 g/g, water solubility index 39.90 %, rehydration ratio 544 % and moisture retention 11.90 % with 75 % desirability.

Keywords : black gram, corn flour, extrusion, physical characteristics

Conference Title : ICFPT 2015 : International Conference on Food Processing and Technology

Conference Location : Paris, France

Conference Dates : August 27-28, 2015