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Effect of ohmic heating on stability of rice bran stored under ambient and refrigeration conditions

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Ohmic heating is an alternative, fast heating technique for food products which takes its name from Ohm's law. The basic principle of ohmic heating is the conversion of electrical energy into heat, resulting in internal energy generation. In the present study ohmic heating experiments were conducted using a cylindrical cell made of Teflon to determine the electrical properties such as electrical conductivity (EC) of rice bran at 25, 30 and 35% moisture contents by applying voltage gradients varying between 56-92 V/cm. The electrical conductivity increased significantly with increase in temperature and moisture content but the variation in EC was not significant with the variation in voltage gradient. So, the ohmic heating of rice bran was conducted after adjusting moisture content to 30% using alternative current (AC) at a frequency of 50 Hz with a voltage of 440 volts in the ohmic heater of 10 kg capacity. It was observed that the EC of rice bran was 0.006-0.034 S/m with the increase in temperature from 20.8-100° C. The ohmic heated rice bran was stored at refrigeration (4-7° C) and ambient conditions (24-27° C) for a storage period of 70 days and evaluated for free fatty acid (FFA) formation. The untreated sample was taken as control. The free fatty acid content of ohmically stabilized rice bran increased very slowly during storage at both refrigeration and ambient conditions as compared to control and remained below 10%. Results showed that the ohmic heating system was good in performance and effective to prevent the increasing of FFA content.

Biography

Kaunsar Jabeen Shinwari has completed her Masters from Sant Longowal Institute of Engineering and Technology in Food Engineering and Technology. She is currently pursuing her Doctoral program from IIT Kharagpur..

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