

Impact of Heat Moisture Treatment on the Yield of Resistant Starch and Evaluation of Functional Properties of Modified Mung Bean (*Vigna radiate*) Starch

Authors : Sreejani Barua, P. P. Srivastav

Abstract : Formulation of new functional food products for diabetes patients and obsessed people is a challenge for food industries till date. Starch is a certainly happening, ecological, reasonable and profusely obtainable polysaccharide in plant material. In the present scenario, there is a great interest in modifying starch functional properties without destroying its granular structure using different modification techniques. Resistant starch (RS) contains almost zero calories and can control blood glucose level to prevent diabetes. The current study focused on modification of mung bean starch which is a good source of legumes carbohydrate for the production of functional food. Heat moisture treatment (HMT) of mung starch was conducted at moisture content of 10-30%, temperature of 80-120 °C and time of 8-24 h. The content of resistant starch after modification was significantly increased from native starches containing RS 7.6%. The design combinations of HMT had been completed through Central Composite Rotatable Design (CCRD). The effects of HMT process variables on the yield of resistant starch was studied through Rapid Surface Methodology (RSM). The highest increase of resistant starch was found up to 34.39% when treated the native starch with 30% m.c at 120 °C temperature for 24 h. The functional properties of both native and modified mung bean starches showed that there was a reduction in the swelling power and swelling volume of HMT starches. However, the solubility of the HMT starches was higher than that of untreated native starch and also observed change in structural (scanning electron microscopy), X-Ray diffraction (XRD) pattern, blue value and thermal (differential scanning calorimetry) properties. Therefore, replacing native mung bean starch with heat-moisture treated mung bean starch leads to the development of new products with higher resistant starch levels and functional properties.

Keywords : Mung bean starch, heat moisture treatment, functional properties, resistant starch

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