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Effect of honey on pasting, thermal and extrusion cooking of barley starch

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The effect of added honey (0 to 20%) was studied on pasting, thermal properties and extrusion cooking of barley starch. Pasting properties and thermal properties were determined using Smart starch analyzer which consisted of physical MCR rheometer and starch cell C-ETD 160/ST and Scanning calorimeter DSC, Pyris-1, Perkin Elmer, Norwalk, CT, USA, respectively. Extrusion trials were performed using co-rotating twin screw extruder. Barely starch showed increase in peak, final, breakdown and setback viscosity when levels of honey was increased from 0% to 10% while honey at concentration of 15% and 20% decreased all the pasting properties parameters. The difference in pasting properties behavior at different concentration of honey was attributed to honey amylase activity. Honey delayed the gelatinization of barley starch but increasing the concentration of honey from 10 to 30% did not affect the gelatinization characteristics. Varying the moisture content from 0.20 to 0.80 g/g dry starch by varying the amount of honey did not affect the thermal properties of barley starch. The indifference of starch gelatinization to varying honey concentration was attributed to the opposing effect of sugars and water on gelatinization. The increase in honey levels resulted in extrudate with increased bulk density, colour a value and decreased lateral expansion, hardness colour L value and b Value.

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