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Colour and Viscosity Attributes of Twin-Screw Extrusion Processed Potato Starch

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***Abstract*:** The effect of twin screw extrusion processing on colour and viscosity characteristics of potato starch was studied using response surface methodology (RSM). Experiments were designed using central composite rotatable design with three-independent variables- feed moisture (14-18%), screw speed (400-550 rpm) and barrel temperature (125-175°C). Extrusion processing significantly affected the colour and viscosity of starch. Increase in feed moisture reduced redness, yellowness, but enhanced luminosity. Increase in screw speed significantly increased all the colour characteristics (luminosity, redness and yellowness) of potato starch extrudates. Increase in barrel temperature decreased luminosity, yellowness and increased redness of the extrudates. The hue angle and chroma values for potato starch extrudates ranged between 74.64 to 86.04^{0} and 17.23 to 33.75 respectively. Viscosity decreased during extrusion cooking of starch. Regression coefficient analysis indicated a lower viscosity with increase in screw speed, whereas an increased viscosity with increasing feed moisture and barrel temperature was observed during processing of potato starch. The study is important for the processed food industry with respect to reformulation and development of food products with desired consistency and improved functional properties using potato starch.

Keywords: Colour, Extrusion, Potato starch, Response surface methodology, Viscosity