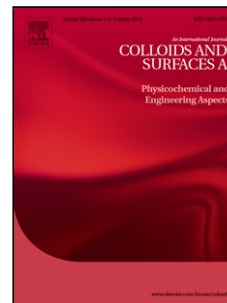


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Effect of concentration and temperature on the formation of wheat hydrogel and xerogel pattern

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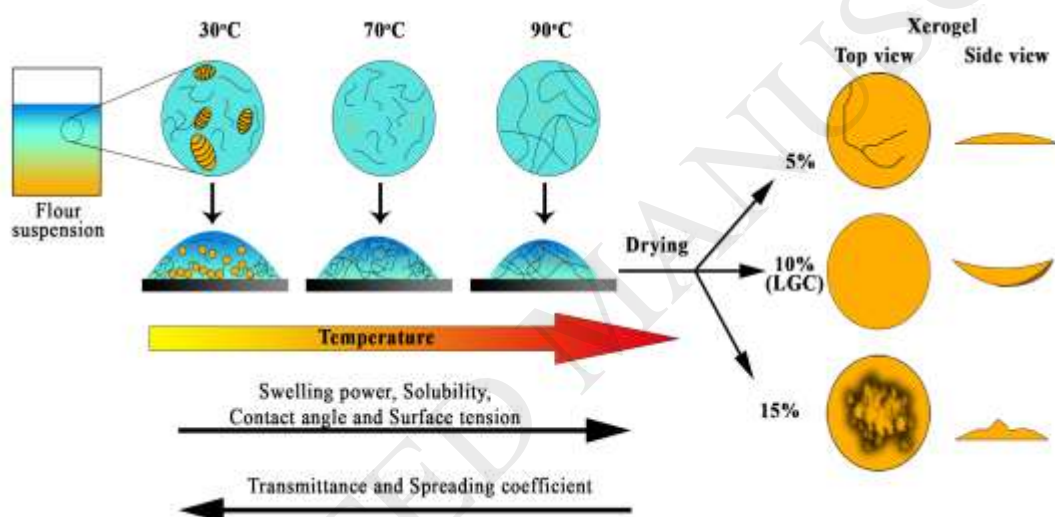
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Graphical abstract



Abstract: The colloidal nature of wheat flour could be utilized in engineering the physical structure of food systems. Gelatinization behavior of starch in wheat flour was studied to develop a wheat hydrogel and the impact of hydrogel characteristics in drying was observed in xerogel surface structure. Effect of variation in wheat flour concentration was analyzed by least gelation concentration and pasting parameters. It showed 10% (w/v) of gelatinized wheat flour suspension can be able to form a three-dimensional polymer network during retrogradation. Influence of hydrogel formation temperature was studied by solubility, swelling power, transmittance, contact angle and surface tension at different temperatures. Increase in solubility and swelling power indicates, leaching of more starch components and binding of more water molecules. The decrease in light absorbance indicates loss of crystallinity and birefringence due to disruption of granular structure.

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