Generalized starch Gelatinization kinetics during Hydrothermal treatment of whole wheat grains

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ABSTRACT

Hydrothermal treatment is the first and vital step of the cereal processing, control of this process depends upon the degree of starch gelatinization inside the grains. The quality of the final products also depends upon the extent of starch gelatinization. The purpose of this study was to investigate the starch gelatinization kinetics of the whole wheat flour during hydrothermal treatment and to enumerate the effect of moisture content on starch gelatinization rate constant for both the grains during hydrothermal treatment. Hydrothermal treatments were designed for different combinations of moisture contents (25-50 % w.b) that commonly occur during cooking of cereal foods and an isothermal temperature of 100 ^{o}C. The degree of starch gelatinization (DG) was measured from the DSC endotherms. The starch gelatinization during hydrothermal treatment followed first-order reaction kinetics and it depends on the moisture content. A linear fit was observed between starch gelatinization rate constant and moisture content.

Key words: *hydrothermal treatment, kinetics, moisture contents,Starch gelatinization, whole wheat grains.*