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## Reduction of gelatinization temperatures of starch blend suspensions with supercritical CO<sub>2</sub> treatment (Article)

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### Abstract

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Modification of starch blend properties by contact with supercritical carbon dioxide (scCO<sub>2</sub>) was studied. Potato starch (PS), sweet potato starch (SPS), and cassava starch (CS) were blended with wheat starch (WS) at 15, 25, 50, 75 and 85% (w/w) ratios. For WS, the maximum decrease in gelatinization temperature (T<sub>p</sub>) was 13 °C. The WS-PS and WS-CS blends exhibited a decrease in T<sub>p</sub> of 13 to 17 °C. Reduction in T<sub>p</sub> by treatment was 10 to 18 °C for all blend ratios. Conditions for lowering the starch blend T<sub>p</sub> were determined to be a minimum contact time of 1 h with scCO<sub>2</sub> at 60 °C and 20 MPa. Swelling of starch granules that leads to the lowering of T<sub>p</sub> involves both kinetic and physicochemical factors. Gelatinization of wheat starch blends with scCO<sub>2</sub> pressure treatment provides a versatile and non-thermal method for modifying the properties of ingredients used in food processing applications. © 2014 Elsevier B.V. All rights reserved.

### Author keywords

Carbohydrate Differential scanning calorimetry Food processing Gelatinization temperature Starch modification

### Indexed keywords

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