

Characterization of the functional properties of hydroxypropylated and cross-linked arrowroot starch in various acidic pH mediums

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Abstrak

Chemical modification of the native arrowroot starch by hydroxypropylation and cross link methods is done to improve or add certain functionality. This method is gaining popular interest from food industry practitioners to enable the stability of starch during acidic food processing. This research studied the changes in the functional properties of modified arrowroot starch in various acidic pH mediums. Being modified by hydroxypropylation and cross-linked methods changes the starch's functional properties in mediums with a variety of pH conditions. The patterns of pasting properties of dual-modified arrowroot starch are similar to each other at different pH mediums, in which the final viscosity value was lower than the peak viscosity value (a type A pattern). The solubility of the modified arrowroot starch increased in a pH of 3.5. Increasing the starch solubility caused the swelling power of starch granules to decrease, and thus lessened the sedimentation volume. Modifying arrowroot starch by using propylene oxide 8% tends to maintain the structure of the granule upon swelling in mediums with any pH conditions. The syneresis value of modified arrowroot starch using 10% propylene oxide and a STMP 1% : STPP 4% ratio showed the lowest value in various pH mediums. The most stable modified starches were those with propylene oxide 8% and a ratio of STMP 1% : STPP 4%.