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Table of Contents

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J.:

Cryoprotective effect of polydextrose on chicken surimi

Two thermal analysis techniques – Differential scanning calorimetry (DSC) and Differential thermal analysis (DTA), – were used to study the cryoprotective effects of polydextrose on chicken surimi. The samples of chicken surimi were mixed with: (a) different mass fractions of polydextrose ($w = 2– 10\%$), (b) κ-carrageenan ($w = 0.5\%$) and different mass fractions of polydextrose ($w = 2– 10\%$), and (c) NaCl ($w = 2\%$) and different mass fractions of polydextrose ($w = 2– 10\%$). Chicken surimi was produced following a modified procedure of Dawson *et al.* (1988) on a broiler (Sasso, 12 weeks, and 1.73 kg live wt.), that was quickly frozen and stored for 3 months at $– 25°$ C. Initial freezing point (T_i), thermal transition temperature (T_p), and denaturation enthalpy (ΔH) were evaluated. The greatest effects of the

cryoscopic depression of the initial freezing point T_i were exhibited by the samples of chicken surimi with added 2% NaCl and 10% polydextrose. Differential scanning calorimetry (DSC) revealed a shift in the thermal transition temperature of myosin and actin to a higher temperature as the mass fraction of polydextrose increased. Since the denaturation enthalpy is directly related to the amount of native proteins, higher values of ΔH indicate higher cryoprotective effects of polydextrose.

Keywords:

[fulltext]