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[home](#) [page](#) [about us](#) [contact](#)

[us](#)

Table of Contents

IN PRESS

CJFS 2014

CJFS 2013

CJFS 2012

CJFS 2011

CJFS 2010

CJFS 2009

CJFS 2008

CJFS 2007

CJFS 2006

CJFS 2005

CJFS 2004

CJFS 2003

CJFS 2002

CJFS 2001

CJFS Home

Editorial Board

For Authors

- **Authors Declaration**
- **Instruction to Authors**
- **Guide for Authors**
- **Copyright Statement**
- **Submission**

For Reviewers

- **Guide for Reviewers**
- **Reviewers Login**

Subscription

Czech J. Food Sci.

**Kovačević D.,
Mastanjević K., Kordić**

J.:

Cryoprotective effect of polydextrose on chicken surimi

Czech J. Food Sci., 29 (2011): 226-231

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 ($w = 2\text{--}10\%$), (b) κ -carrageenan ($w = 0.5\%$) and different mass fractions of polydextrose ($w = 2\text{--}10\%$), and (c) NaCl ($w = 2\%$) and different mass fractions of polydextrose ($w = 2\text{--}10\%$). 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:

thermal transitions temperature; initial freezing point; DSC; DTA; chicken surimi; polydextrose

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