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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.

Ciesarová Z., Kiss E., Kolek E.

Study of factors affecting acrylamide levels in model systems

Czech J. Food Sci., 24 (2006): 133-137

The factors important for the acrylamide formation in model systems were studied. The effects of two starch matrices (potato, wheat), the share of two monosaccharides (glucose and fructose) on the formation of acrylamide, and the impact of water addition were compared in model systems under isothermal conditions. Acrylamide was determined by GC/MS-NCI technique. The results showed that the water content is one of the most important factors in the formation of acrylamide, besides the reaction temperature and time. The minimum of acrylamide formation was observed at the water content between 25 and 40%; outside of this range, the acrylamide concentration was higher. The presence of starch reduced the amount of acrylamide formed from asparagine and saccharide, moreover, the effects of

potato and wheat starches were similar. Fructose was more effective for the acrylamide formation in comparison with glucose. The combined contribution of glucose and fructose in the mixture with asparagine and starch to the acrylamide level corresponded to the sum of separate contributions of saccharides only at the middle content of added water.

Keywords:

acrylamide; water content; GC-MS; Maillard reaction

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