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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.

Zhang Y., Zhao X-H.:

Properties of casein

hydrolysate as affected by plastein reaction in ethanol-water medium

Czech J. Food Sci., 31 (2013): 559-567

Casein hydrolysate with *in vitro* ACE-inhibitory activity of 44.4% at 0.3 mg/ml was generated from casein by Alcalase and modified by the Alcalase-catalysed plastein reaction in an ethanol-water medium. Eight treated hydrolysates were prepared using the reaction time of 1-8 h under ethanol or substrate concentration, Alcalase addition and reaction temperature of 56.8% (v/v) or 56.8% (w/v), 8.4 kU/g peptides and 37.5° C, respectively. Most of the treated hydrolysates showed enhanced ACE-inhibition compared to casein hydrolysate, and a reaction time of 4 h brought about the highest ACE-inhibition. All treated hydrolysates had lower zinc- or calcium-chelation but slightly higher iron (II)-chelation than casein hydrolysate, and a reaction time of 4 or 2 h could grant the treated hydrolysates the highest zinc- or calcium-chelation. Kinetic evaluation

treated hydrolysates were competitive inhibitors to ACE. ACE-inhibition of these evaluated hydrolysates originated from themselves but was uncorrelated with their zinc-chelation, while their CaCO_3 precipitation inhibition was clearly correlated with their measured calcium-chelation ($P < 0.05$).

Keywords:

angiotensin converting enzyme; casein; hydrolysate; metal chelation; plastein reaction

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