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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.

Lapčík O.

Endocrinological

aspects of dietary habits

Czech J. Food Sci., 22 (2004): 29-38

Dietary habits reflect both the recent economic possibilities and the cultural history of individual human populations. They may influence endocrine systems and thus affect the health of the respective populations in several manners: (1) People consuming exclusively local products may lack certain micronutrients. This is important especially in areas with low levels of iodine and/or selenium in the environment. Thyroid gland insufficiency resulting from the iodine deficiency was widespread in many areas of Central Europe until the introduction of iodine supplementation in the second half of 20th century. Iodine deficiency is still a serious problem in many areas of Africa and Asia. (2) Numerous cultural plants contain compounds able to influence important metabolic pathways. Iodine deficiency is usually worsened by thyroidal peroxidase inhibitors, so-called goitrogens. Phenolic

and terpenoid compounds may interfere in the metabolism of steroid hormones. Glycyrrhetic acid from licorice is a potent inhibitor of 11-beta-hydroxysteroid dehydrogenase. Isoflavonoids from legumes (e.g. genistein and daidzein) and their metabolites (e.g. equol) were found to inhibit the following enzymes: aromatase, 5alpha-reductase, 7alpha-hydroxylase, 3beta-hydroxysteroid and 17beta-hydroxysteroid dehydrogenases, etc. Isoflavonoid sulphates influence local availability of steroids by inhibiting sterol sulphatases. (3) Plant-derived compounds are able to interact with nuclear receptors and act either as hormone agonists or as antagonists. Recently, the attention has been paid namely to the phenolic substances interacting with oestrogen receptors so-called phyto-oestrogens.

Keywords:

dietary habits; thyroid gland; endemic thyreopathie; goitrogen; steroid; mineralcorticoid; phyto-oestrogen; inhibitor; enzym; receptor

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