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



[us](#)

Table of
Contents

IN PRESS

CJAS 2015

CJAS 2014

CJAS 2013

CJAS 2012

CJAS 2011

CJAS 2010

CJAS 2009

CJAS 2008

CJAS 2007

CJAS 2006

CJAS 2005

- [Authors Declaration](#)
 - [Instruction to Authors](#)
 - [Guide for Authors](#)
 - [Fees](#)
 - [Submission](#)
-

Czech Journal of Animal Science

Lycopene regulates production performance, antioxidant capacity, and biochemical parameters in breeding hens

Sun B., Ma J., Zhang J., Su L., Xie Q., Bi Y.:

Czech J. Anim. Sci., 59 (2014): 471-479

[[fulltext](#)]

Lycopene is a carotenoid present in vegetables and ripe fruit and has been proved to be the most potent antioxidant among various common carotenoids. This study assessed the effects of lycopene on

performance production, tissue lycopene content, antioxidant capacity, and biochemical parameters in 720 Xing-hua breeding hens. Rice-soybean diets were supplemented with different lycopene levels: 0, 20, 40, and 80 mg/kg. Lycopene supplementation significantly increased fertilization rates in hens. Serum and egg lycopene contents and the Roche Yolk Colour Fan score increased with lycopene supplementation through day 7. In the liver, lycopene supplementation significantly increased superoxide dismutase (SOD), total antioxidant capacity (T-AOC), and reduced glutathione to oxidized glutathione ratio (GSH/GSSG). Additionally, lycopene supplementation increased serum SOD, serum T-AOC, serum glutathione peroxidase, and serum GSH/GSSG. Lycopene addition significantly decreased total cholesterol and increased high density lipoprotein cholesterol and triiodothyroxine. It also improved fertilization rates, antioxidant capacity, and metabolism in breeding hens.

Keywords:

carotenoid; fertilization rates; oxidative

stability; biochemical index; hens

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