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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

For Authors

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

Subscription

Czech Journal of Animal Science

Effect of *in ovo* ghrelin administration on subsequent serum insulin and glucose levels in newly-hatched chicks

Lotfi A., Aghdam-Shahryar H., Ghiasi-Ghalehkandi J., Kaiya H., Maheri-Sis N.:

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[[fulltext](#)]

Ghrelin is a regulatory peptide in glucose homeostasis in animal species. Its effect in the avian embryo is unclear. The aim of this study was to investigate the effects of *in ovo* ghrelin administration on serum

glucose and insulin levels of hatched chicks. A total of 250 fertilized eggs were divided into 5 groups; group T1 as control (without injection), group T2 (*in ovo* injected with 50 ng/egg ghrelin on day 5), group T3 (*in ovo* injected with 100 ng/egg ghrelin on day 5), group T4 (*in ovo* injected with 50 ng/egg ghrelin on day 10) and group T5 (*in ovo* injected with 100 ng/egg ghrelin on day 10). After hatching, serum insulin and glucose concentrations were determined. Group T4 and T5 showed significantly higher serum insulin levels (0.43 and 0.60 ng/ml, respectively) compared with T1, T2 and T3 (0.09, 0.10, and 0.23 ng/ml, respectively) in hatched chicks. Glucose concentrations have not been affected by *in ovo* administered ghrelin in all injected groups. It seems that embryonic β -cells were stimulated to secrete a considerable level of insulin in response to *in ovo* ghrelin in the late embryonic life. The observed stability of glucose rate suggests the incidence of insulin resistance at hatching time or in newly hatched chicks from *in ovo* ghrelin administered eggs on day 10.

Keywords:

chicken; embryo; ghrelin; *in ovo* injection;
insulin

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