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### **Eggs as functional food: Effects of organic selenium dietary supplementation of laying hens on egg selenium content and shelf stability**

Selenium (Se) is an essential trace element, which has mainly antioxidant function. In some geographical areas with low soil Se content, human populations suffer from selenium deficiency and may benefit from functional foods with higher selenomethionine levels, rather than from inorganic Se supplements. This study compared the effect of different dietary supplements of Se (inorganic and organic) of laying hens on the selenium content in their eggs and egg shelf stability. The birds were fed diets with 0.3 ppm of supplemental selenium, either as sodium selenite or Se-yeast (containing selenomethionine and selenocysteine) and compared with an unsupplemented control group. The study lasted 2 months. The selenium content of egg yolk and albumen was measured in the weeks 3 and 7. Egg freshness parameters were measured on days 0, 14, 28 and 35 after oviposition. The selenium content of egg yolk is significantly higher than that of the egg white. The mean control values were 492 µg/kg and 11 µg/kg, respectively. Albumen Se content in the Se-yeast group was significantly ( $P < 0.001$ ) higher than that in the sodium selenite group (165 µg/kg vs. 103 µg/kg, respectively). Yolk Se content was significantly ( $P < 0.001$ ) higher in both the inorganic and organic Se supplemented groups than in the control (603 µg/kg and 618 µg/kg vs. 492 µg/kg, respectively), however, no significant differences were found between the sodium selenite and Se-yeast eggs. No significant effect on egg shelf stability was observed. The supplementation of laying hens with the organic form of selenium (Se-yeast) resulted in significantly higher contents of Se in eggs. The effect of dietary Se on egg shelf stability has been studied in more detail in our follow-up studies.

**Keywords:** dietary selenium, eggs, shelf stability, functional food

### **Biography:**

Josef Illek is a Head of Large Animal Clinical Laboratory, University of Veterinary Sciences Brno Associate Professor at the University of Veterinary Sciences Brno, Czech Republic. Main focus: metabolic and production diseases in cattle. Over 100 impacted scientific publications and 300 publications in professional journals. Activities: lecturing on laboratory diagnosis of food-producing animals, Head of Large Animal Clinical Laboratory, President of Czech Association for Buiatrics, member of European College of Bovine Health Management.

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