

The effect of essential oils on quality and mineral composition of shelleggs

Róbert Herkeľ, Branislav Gálik, Daniel Bíro, Michal Rolinec, Milan Šimko, Miroslav Juráček, Henrieta Arpášová, Ondrej Hanušovský

References

ANDJELKOVIC, M. et al. (2010) Phenolic compounds and some quality parameters of pumpkin seed oil. *European Journal of Lipid Science and Technology*, vol. 112, pp. 208-217. doi:<http://dx.doi.org/10.1002/ejlt.200900021>

AOAC. (2000). *Official methods of analysis*. Washington: Association of official analytical chemists.

ARPÁŠOVÁ, H. et al. (2014) The influence of oregano essential oil and *Rhus coriaria* L. on qualitative parameters and microbiological indicators of hens eggs content. *Scientific Papers: Animal Science and Biotechnologies*, vol. 47, no. 2, pp. 6-12.

ARPÁŠOVÁ, H. et al. (2015) The effect of selected feed additives on the shell qualitative parameters of table eggs. *Scientific Papers: Animal Science and Biotechnologies*, vol. 48, no. 1, pp. 6-10.

AYDIN, R., PARIZA, M. W. and COOK, M. E. (2001) Olive oil prevents the adverse effects of dietary conjugated linoleic acid on chick hatchability and egg quality. *The Journal of Nutrition*, vol. 131, no. 3, pp. 800-806.

BAR, A., VAX, E. and STRIEM, S. (1999) Relationships among age eggshell thickness and vitamin D metabolism and its expression in the laying hen. *Comparative Biochemistry and Physiology – Part A: Molecular and Integrative Physiology*, vol. 123, pp. 147-154.

BOTSOGLOU, N. et al. (2005) The effect of feeding rosemary, oregano, saffron and alpha-tocopheryl acetate on hen performance and oxidative stability of eggs. *South African Journal of Animal Science*, vol. 35, no. 3, pp. 143-151.

European Commission (2007): Council Regulation (EC) No 834/2007 of 28 June 2007 on organic production and labelling of organic and repealing regulation (EEC), 2092/91. *Official Journal*, L 189, 20/07/2007, pp.1-23.

FAITARONE, A. B. G. et al. (2013) Cholesterol levels and nutritional composition of commercial layers eggs fed diets with different vegetable oils. *Brazilian Journal of Poultry Science*, vol. 15, no. 1, pp. 31-38.

HASHEMI, J. M. (2013) Pumpkin seed oil and vitamin E improve reproductive function of male rats inflicted by testicular injury. *World Applied Sciences Journal*, vol. 23, no. 10, pp. 1351-1359. doi:<http://dx.doi.org/10.5829/idosi.wasj.2013.23.10.13153>

HERKEL', R. et al. (2016) The effect of a phyto-genic additive on nutritional composition of turkey meat. *Journal of Central European Agriculture*, vol. 17, no. 1, pp. 25-39. doi:<http://dx.doi.org/10.5513/JCEA01/17.1.1664>

CHERIAN, G., CAMPBELL, A. and PARKER, T. (2009) Egg quality and lipid composition of eggs from hens fed *Camelina sativa*. *Journal of Applied Poultry Research*, vol. 18, pp.143-150. doi:<http://dx.doi.org/10.3382/japr.2008-00070>

CHETTY, K. N. et al. (2004) Garlic induced alteration in liver mineral concentrations in corn oil and olive oil fed rats. *Pathophysiology*, vol. 11, pp. 129-131.

KÓŇA, J., ĎUROVKA, M. and TANCÍK, J. (2007) *Pumpkin vegetables*. Nitra: Garmond. 148 p.

KUCUKERSAN, K., YESILBAG, D. and KUCUKERSAN, S. (2010) Influence of different dietary oil sources on performance and cholesterol content of egg yolk in laying hens. *Journal of Biological and Environmental Sciences*, vol. 4, pp. 117-122.

LI-CHAN, E. C. Y. and KIM, H. O. (2008) Structure and chemical composition of eggs. In: MINE, Y (Ed.). *Egg bioscience and biotechnology*, Wiley-Interscience, Hoboken, pp. 1-8.

- LOKAEWMANEE, K. et al. (2014) Eggshell quality, eggshell structure and small intestinal histology in laying hens fed dietary Pantoea-6 and plant extracts. *Italian Journal of Animal Science*, vol. 13, pp. 332-339. doi:<http://dx.doi.org/10.4081/ijas.2014.3163>
- NAGY, J. et al. (2009) *Hygiene of poultry meat, eggs and venison*. Košice: Editorial Centre of University of Veterinary Medicine, pp. 291–338.
- NYS, Y. et al. (1999) Avian eggshell mineralization. *Poultry and Avian Biology Reviews*, vol. 10, pp. 143-166.
- PANDA, A., RAMA, R. S. and RAJU, M. (2009) Phytobiotics, a natural growth promoter. *Poultry international*, vol. 48, no. 7, pp. 10-11.
- PARK, J. H., UPADHAYA, S. D. and KIM, I. H. (2015) Effect of dietary Marine Microalgae (*Schizochytrium*) powder on egg production, blood lipid profiles, egg quality, and fatty acid composition of egg yolk in layers. *Asian Australasian Journal of Animal Science*, vol. 28, no. 3, pp. 391-397. doi:<http://dx.doi.org/10.5713/ajas.14.0463>
- SHAKOOR, H. I. et al. (2002) Effect of feeding canola and soybean oils on serum lipid profile in commercial layers. *Pakistan Veterinary Journal*, vol. 22, pp. 48-51.
- SHAKOOR, H. I. et al. (2003) Comparative study on the effects of feeding canola and soybean oils on egg production and cholesterol in commercial layers. *Pakistan Veterinary Journal*, vol. 23, pp. 22-26.
- STEVENSON, D. G. et al. (2007) Oil and tocopherol content and composition of pumpkin seed oil in 12 cultivars. *Journal of Agricultural and Food Chemistry*. vol. 55, pp. 4005-4013.
- SUGINO, H., NITODA, T. and JUNEJA, L. R. (1997) General chemical composition of hen eggs. In: YAMAMOTO, T. et al. (eds.). *Hen eggs: Their basic and applied science*. New York: CRC Press, pp. 13-24.
- TŮMOVÁ, E., GOUS, R. M. and TYLER, N. (2014) Effect of hen age, environmental temperature, and oviposition time on egg shell quality and egg shell and serum mineral contents in laying and broiler breeder hens. *Czech Journal of Animal Science*, vol. 59, no. 9, pp. 435-443.
- ZELENKA, J. et al. (2008) The effect of dietary linseed oils with different fatty acid pattern on the content of fatty acids in chicken meat. *Veterinarni Medicina*, no. 2, pp. 77-85.
- ZHANG, Z. F. and KIM, I. H. (2014) Effects of dietary olive oil on egg quality, serum cholesterol characteristics, and yolk fatty acid concentrations in laying hens. *Journal of Applied Animal Research*, vol. 42, pp. 233-237. doi:<http://dx.doi.org/10.1080/09712119.2013.822815>
- ZHAO, G. et al. (2007) Dietary α -linolenic acid inhibits proinflammatory cytokine production by peripheral blood mononuclear cells in hypercholesterolemic subjects. *The American Journal of Clinical Nutrition*, vol. 85, no. 2, pp. 385–391.