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**Title FT-NIR Application as An Alternative Tool for Evaluation of Ozone-Treated Eggs Freshness during Storage**  
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**Abstract Text**

Eggs' nutritional composition is characterized by a high content of proteins and lipids, being considered one of the most complete food products for the human diet. The quality assessment of fresh eggs and egg products is performed using destructive and time-consuming methods, therefore the use of fast tools becomes necessary. Near Infrared (NIR) spectroscopy is considered a very reliable, fast, fully automated, reliable and nondestructive for determining functional groups (C-H, N-H and O-H bonds) and monitoring the changes of organic matter and water in foods. The eggs were exposed to various ozone concentrations (2, 4 and 6 ppm, 2 and 5 min) at room temperature. Eggs were scanned in FT-NIR spectroscopy with using a Bruker multi-purpose analyze, equipped with an InGaAs detectors working in the 800–2500 nm to quantify of fresh eggs at end of storage. There were clear differences between the typical average absorbance spectra corresponding to the ozonated eggs and also control at the end of the storage. The absorbance spectrum stays relatively flat from 800 to 1300 nm. A prominent peak appears at 1410 nm (OH vibration of water), and a combination band at 1940 nm (involving OH stretching and OH deformation) coincides with the water absorption peak, which is due to absorption by water and carbohydrate. The wavelength region from 2000 to 2400 nm had particularly noticeable organic matter spectral differences. There are shifts in absorption to lower or higher wavelengths, and these shifts seem to be in relation (state of water in food) to the hydration potential of the respective solutes. At the end of the storage, absorption peaks dropped for control and 2,4 and 6 ppm when compared with other treatments. The present study demonstrates the potential application of the FT-NIR in determination of internal qualities of eggs freshness. NIR spectroscopy is a very extremely reliable, nondestructive and rapid technique for the prediction of qualitative chemical and physical properties of fresh eggs.

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**Keywords FT-NIR spectroscopy, eggs, gaseous ozone, storage.**