MONITORING THE EFFECT OF THE ULTRA-HIGH PRESSURE PRESERVATION TECHNOLOGY BY NEAR INFRARED REFLECTANCE SPECTROSCOPY

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The ultra-high pressure technology for the preservation of foods is under intense research to evaluate its potential as an alternative or complementary process to traditional methods of food preservation. Traditional processing methods usually need a large amount of energy, may cause unwanted reactions in the food, leading to cooked flavor and loss of vitamins, etc.

The application of ultra-high hydrostatic pressure for food processing consists of subjecting the food to pressures in the range of 100-1000 MPa. The ultra-high pressure inactivates the microorganisms and some enzymes, promotes the germination of spores and extends the shelf-life of the foods.

This new technology follows the "minimal processing" concept minimizing the quality degradation, saving the vitamins, essential nutrients and flavors as well as utilizing less energy.

We joined the research team at our University involved in the mentioned technology using an ultra-high pressure equipment, recording of the near infrared spectra and signal response of a chemosensor array (electronic nose) of their meat (beef and pork), vegetable and fruit samples exposed to different pressure. The results of our investigations achieved by evaluating the measured data using PCA and PQS methods will be presented.