

MONITORING THE SPOILAGE PROCESS OF DAIRY PRODUCTS BY DIELECTRIC MEASUREMENT

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The dielectric behaviour of biological materials has been studied for decades, as measurement methods based on dielectric properties offer promising new development opportunities in several fields of scientific research and industrial technologies due to its simple, quick and accurate useability. In our study, the changes of dielectric constant and dielectric loss factor were measured during the storage and spoilage process of fermented dairy products. The dielectric parameters were determined in the frequency range of 200-2400 MHz with an open-ended coaxial dielectric probe. During the deterioration, the number of viable lactic acid bacteria (*Lactobacillus* spp.) was also determined by using the standard plate count technique. Our aim was to determine whether the changes in dielectric parameters are correlated with the microbiological properties of yoghurts during storage at 20 °C. Our results show that physicochemical changes caused by the microbial metabolic activity are reflected in dielectric behaviour of the products. While the microbial growth is closely linearly related to the change in dielectric constant at 400 MHz frequency, second-order polynomial relationship was observed between the change of the dielectric loss factor and the number of viable cells. Our results verified, that the dielectric measurement method is suitable for monitoring the spoilage process and for determine the expressed deterioration rate of fermented dairy products.

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