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INNOVATIVE PHOTONIC SYSTEM IN RADIOFREQUENCY AND MICROWAVE RANGE TO DETERMINE CHICKEN MEAT QUALITY

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ABSTRACT

Nowadays, one of the most important challenges of poultry industry is to determine individually the meat quality class (pale, soft and exudative, normal and dark, firm and dry meats) by non-invasive, accurate and fast technique. For this purpose, dielectric spectra in radiofrequency and microwave ranges were studied. In radiofrequency range, the permittivity was measured by a non-destructive sensor conformed by three points with blunt-ended electrodes connected to an *Agilent* 4294A impedance analyser, and in microwave range an *Agilent* 85070E open-ended coaxial probe connected to an *Agilent* E8362B Vector Network Analyser were used. This work demonstrates the direct relation between the pH evolution and the dielectric constant at α-dispersion, and also, that the main structural proteins degradation has direct relation with the dielectric constant at β-dispersion, being possible to segregate meat depending on the level of protein degradation. Finally, this paper ends with a classification model for quality poultry meat based on a photonic analysis at radiofrequency range by using the Traffano-Schiffo model.

Keywords: poultry meat, quality, permittivity, radiofrequency, microwave, dispersion.

1. Introduction