

ABSTRACT

In recent decades, population growth and globalization, have led to monopolization and therefore a large-scale production. In the food industry, the dynamics of production involves automated systems to produce consistently high-quality food.

To achieve this goal, it is mandatory for companies to have well developed production lines and an effective control process and quality control that ensure they get the best result and it makes them competitive. That is why new inspection and monitoring tools are needed in order to guarantee the quality, especially when many of the traditional manufacturing processes have been adapted to new production standards.

This thesis is aimed to evaluate the performance of electronic sensors based on techniques of impedance spectroscopy, potentiometry and pulse voltammetry for controlling and optimizing the production process of dry cured ham.

The results showed that the impedance technique can be useful for controlling the different steps of the process; its responses are related to the physicochemical changes generated in the product during processing, although it is necessary to develop a probe that allows the analysis without destructive sampling. Potentiometry technique which provides a direct measurement probe, allowed the discrimination between good and altered hams, resulting in an electronic sensor to control all the pieces during the production.

Despite the performance of the sensors, it is necessary to increase the research in this area to improve the obtained results. In order to develop a sensor for the ham manufacturing process that helps in the control of the process and guarantees the acceptance of the consumers.