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THE BOOK OF ABSTRACTS

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SMALL SCALE BEEF JERKY PRODUCTION - DEVELOPMENT OF DRYING PROCESS

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ABSTRACT

Beef jerky is a shelf-stable ready-to-eat dried meat product. In order to obtain desired product characteristics, it is necessary to apply the appropriate drying process in combination with adequate heat treatment, i.e. desired lethality time-temperature combination sufficient for destruction of pathogenic microorganisms (“cooking time”). In this study, the drying process with heat treatment was developed in laboratory conditions using constant climate chamber, Model KBF 115 (BINDER GmbH, Germany). The drying program was divided in two phases, lasting in total 6h and 30min. During the first so-called cooking phase, the temperature in chamber was 70°C during the 2h and 15min. long period, while relative humidity ranged from 80% to 93.4%, being $\geq 90\%$ for at least 1h. Throughout the second phase, drying temperature ranged from 60°C to 65°C, while the relative humidity was gradually reduced from 70% to 35% in 4h and 15min. Efficiency of developed drying and cooking process was verified by microbial analyses and determination of water activity (a_w), moisture-protein-ratio (MPR) as well as product yield. Pathogenic bacteria such as *Salmonella spp.*, *Escherichia coli* and *Enterobacteriaceae* were not detected in any sample, as well as yeasts and molds. Water activity (a_w) in final products ranged from 0.786 to 0.814, being lower then recommended value (0.85) for obtaining safe and stable jerky products (FSIS Compliance Guideline, 2014).

Additionally, MPR was below recommended value (0.75:1), ranging from 0.61 to 0.66, and product yield was approx. 40.4%.

Keywords: beef jerky, dried meat product, drying process, water activity.

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