

Effect of high hydrostatic pressure on microbiological, physicochemical and sensory parameters of Winter salami

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INTRODUCTION

High hydrostatic pressure (HHP) treatment is an increasingly familiar and widespread preservation method, used to post-process decontamination control technology for ready-to-eat (RTE) products, especially in those foods in which thermal treatment not applicable. Several studies showed the effectiveness of HHP on pathogenic microorganisms such as *Staphylococcus aureus*, *Salmonella enteritidis*, *Listeria monocytogenes* (Chen et al., 2006). According to EC (2007) regulation the maximum level of *L. monocytogenes* in cured and dry-fermented products of 100 CFU/g. However, in the United States a “zero tolerance” rule for this pathogen in RTE products (FSIS, 2015).

Winter salami (in Hungarian: Téliszalámi) is a dry fermented salami produces according to a centuries-old tradition in Hungary made from pork and fat. The process of Winter salami – ingredients and additives and drying - may not be effective to inactivate pathogens. Therefore, it can be treated by HHP to possibly delay the growth of pathogen micrororganisms. The effectiveness of HHP are proven but can cause changes in the treated food by changing its colour and oxidation characteristics (Bak et al., 2019).

OBJECTIVES

The aim of this study was to investigate physicochemical, microbiological and organoleptic characteristics of Winter salami treated with 1x5 min and 2x3 min at 600 MPa high hydrostatic pressure.

MATERIALS AND METHODS

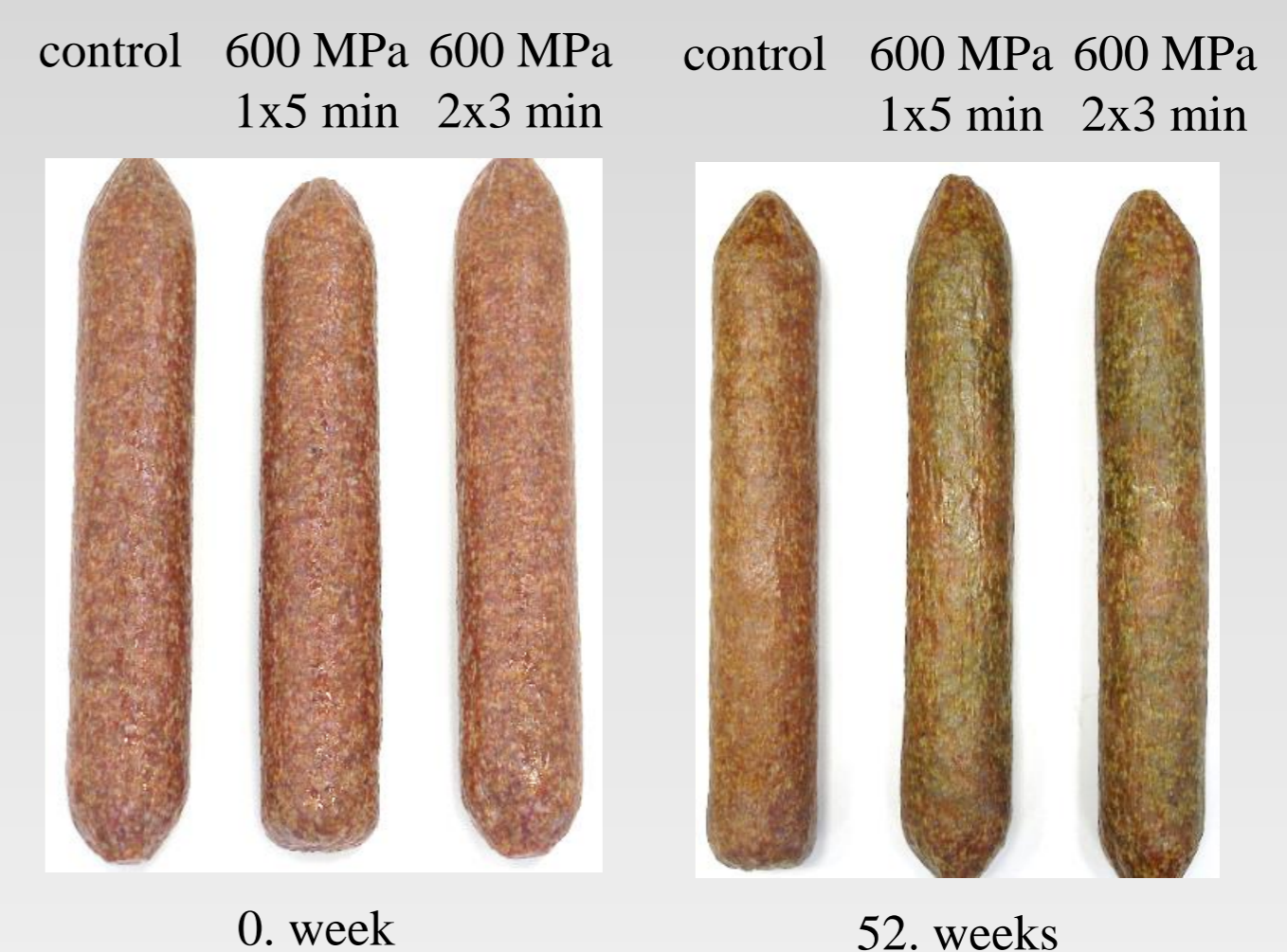
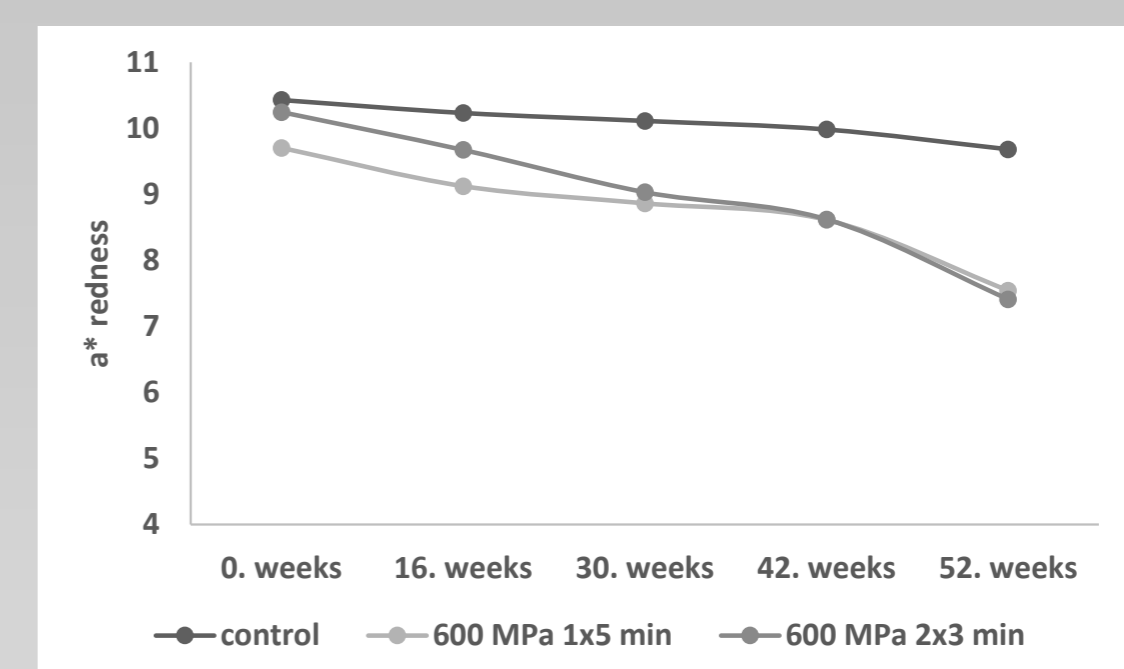
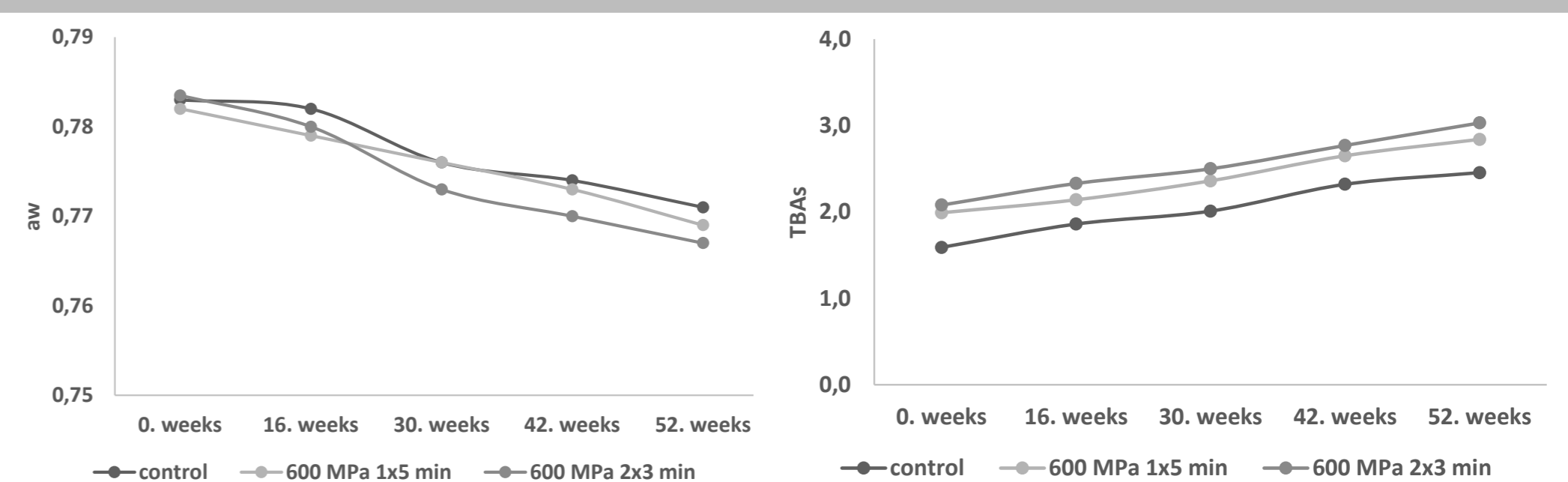
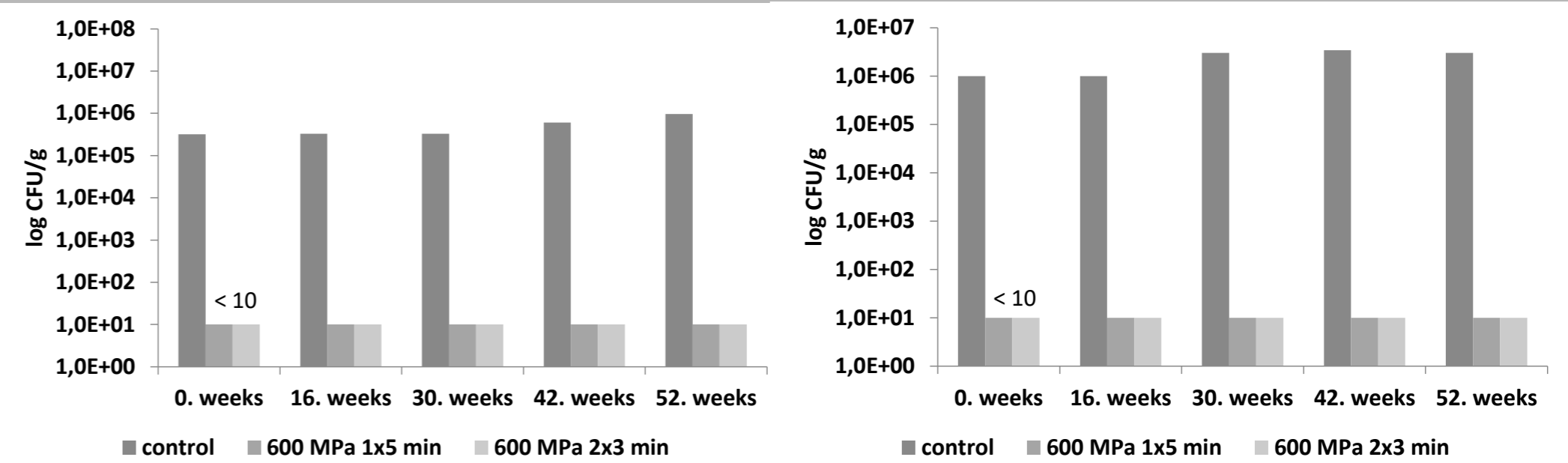
Winter salami (800 g)

RESATO FPU1000
HHP Equipment



- Winter salami samples were inoculated *L. monocytogenes* and *Staphylococcus aureus* with 6 log CFU/g. After inoculation samples were rested in a day.
- Samples were treated at 600 MPa for 1x5 min or 2x3 min at room temperature with 100 MPa/min. Inoculated samples without HHP treatment served as controls.
- During ripening following HHP treatments pH, water activity (a_w), rancidity (thiobarbituric acid count, TBAs), CIELab color, sensory characteristics were measured at 0, 16, 30, 42 and 52 weeks. Samples without inoculation was prepared for the organoleptic evaluation.
- The *L. monocytogenes* and *Staphylococcus* microbial counts were determined on selective medium.

RESULTS



- *L. monocytogenes* and *Staphylococcus aureus* counts of HHP treated samples remained below detection limit (<1 log CFU/g) during 52 weeks storage.
- The TBAs count associated with rancidity steadily increased during ripening. The HHP treated samples showed slightly higher TBAs count than control sample.
- The HHP treatment had only an effect on the redness (a^*) the treated samples were less red compared to control sample.
- The HHP treatment had no significant effect on sensory characteristics compared to control sample.

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ACKNOWLEDGEMENT

The project was supported by the Doctoral School of Food Science (SZIU) and by the European Union and co-financed by the European Social Fund (grant agreement no. EFOP-3.6.3-VEKOP-16-2017-00005) and Supported by the ÚNKP-20-4-1 New National Excellence Program of the Ministry for Innovation and Technology from the Source of the National Research, Development and Innovation Fund.