INCREASING SHELF LIFE OF FISH THROUGH HIGH HYDROSTATIC PRESSURE TREATMENT

Adrienn Tóth[1], Péter Palotás[1], Csaba Németh[2*], Barbara Csehi[1], Louis Argüello Castillo[1], László Friedrich[1], Csaba Balla[1], Péter Póti[3]

[1]Department of Refrigeration and Livestock Products Technology, Corvinus University of Budapest, Ménesi út 43. H-1118, Budapest, Hungary
[2]Capriovus Ltd., Dunasor 073/72 hrsz., H-2317 Szigetcsép, Hungary
[3]Institute of Animal Husbandry, Szent István University, Páter Károly út. 1, H-2100 Gödöllő, Hungary

[*]e-mail: nemeth.csaba@capriovus.hu

Abstract

Fish under high hydrostatic pressure treatment goes through numerous changes. Our experiments served to determine optimal pressure and time parameters which, when applied, result in very small changes in product color, physical and chemical characteristics.

Carp and zander samples were treated at 150, 250, 400, and 600 MPa in the Resato FPU-100-2010 system of Corvinus University's Department of Refrigeration and Animal Products. Treatment duration were 2 and 5 minutes. To measure color, a MINOLTA CR-400 tristimulus colorimeter was used. For the microbiological analysis, the viable cell count was derived with dilute plate-pouring on Nutrient Agar. We kept vacuum packed samples at 2 - 3 ^{0}C for 10 days and tracked the changes.

HHP- treated common carp showed a* values tending toward red after 5 days holding time, while its b* values increased constantly toward yellow. Zander, during 5 days of holding, had reduced a* value in the direction of green, while the b* value moved out of the negative range to positive, that is, toward yellow. Color data for common carp fluctuated throughout the 10-day holding time, whereas color changes in zander equaled those of the 5 day holding time experiment. The HHP treatment resulted in reduced total viable cell count of approximately two orders of magnitude, which is in agreement with the literature. In any case, throughout the holding time, viable cell count remained below the initial count of the control sample.

We have proved with our experiments that high pressure treatment reduces the initial microbe count in comparison to the control. We have made the product safer and lengthened its shelf life by many days. Although fish flesh color became lighter because of the treatment, it did not lose its original appearance, and because the parameters were at optimal levels, the amount of color loss was not significant.

***Key words**: Fish, HHP, Carp, Bass.*