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BOOK OF ABSTRACTS

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I10. Industrial and Food Microbiology and Biotechnology

P359. Hyperbaric storage of raw milk at room temperature

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Hyperbaric Storage (HS) is a novel preservation methodology that has resurged in the recent years, since it allows significant energetic costs reduction, as energy is only needed to generate the pressure and also no energy is needed to maintain the temperature. It acts similarly to refrigeration by microbial growth inhibition and in some cases, microbial inactivation may also occur.

In this work, raw, unpasteurized milk was stored under pressure (50/62/75/100 MPa) at variable uncontrolled room temperature (17-24°C) and compared with refrigeration (4°C) under atmospheric pressure. The evolution of the vegetative total aerobic mesophiles (TAM), lactic acid bacteria (LAB), Enterobacteriaceae (ENT), coliform bacteria (COL) and yeast and moulds (YM) counts was monitored throughout 60 days. Also, *Escherichia coli*, *Listeria innocua* and *Salmonella senftenberg* were inoculated to a final concentration of 5 logCFU/mL in another set of raw milk samples, and stored under 50/75/100 MPa.

Milk stored at 4°C showed clear signs of deterioration after 14 days of storage, with TAM and ENT counts reaching above 6 logCFU/mL. On the other hand, ENT and YM were very sensitive to all HS conditions, being reduced to counts below the detection limit (1 logCFU/mL) after 28 and 14 days of storage, respectively. TAM were more resistant to HS being reduced by around 1.13, 1.16, 1.27 and 1.83 logCFU/mL after 7 days under 50/62/75 and 100 MPa, respectively. However, after 28 day of storage at 50 MPa, TAM, LAB and COL were able to recover and grow to counts above 6 logCFU/mL. Samples under 62 and 75 MPa showed an overall microbial growth inactivation behaviour similar for all studied microbial groups, being this effect stronger for samples under 100 MPa. Regarding the inoculated microorganisms, *E. coli* was the most sensitive to pressure, with counts decreasing to below the detection limit even for the lower pressure (50 MPa after 21 days), followed by *S. senftenberg* (being reduced below 1 logCFU/mL only at 75 MPa after 10 days of storage) and then *L. innocua* (with counts reduced to below the detection limit under 75/100 MPa only after 21 days of storage).