

Title The influence of different preservation methods on spoilage bacteria populations inoculated in *morcilla de Burgos* during anaerobic cold storage

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Abstract

Blood sausage is a widely consumed traditional product that would benefit from an extended shelf life. The two main spoilage bacteria in vacuum-packaged *morcilla de Burgos* are *Weissella viridescens* and *Leuconostoc mesenteroides*. This study examines the way in which three preservation treatments — organic acid salts (OAS), high-pressure processing (HPP) and pasteurization - influence these bacterial populations and their spoilage behaviour. HPP and pasteurization treatments were found to inhibit growth of the inoculated species and delay sensory spoilage of the product. In both treatments, *L. mesenteroides* was observed to have a longer recovery time; even so, once its growth started, it grew faster than *W. viridescens*. This longer recovery time might be due to metabolic modification following treatment, which would affect the production of metabolites such as acetic acid and some aldehydes. *W. viridescens* was the first strain to recover from the two treatments. It preserved its spoilage behaviour and even increased the production of certain compounds such as acetoin or ethanol. The extended product shelf life following HPP and pasteurization treatments might be due to a combination of various factors such as the fall in both microbial populations, as well as the delay in spoilage caused by damage to *L. mesenteroides* cells, as this strain is the fastest-acting, most intensive spoilage microorganism. It was observed that the addition of organic salts neither diminished nor delayed the growth of the two inoculated species. Nevertheless, the results also indicate that this treatment inhibits the metabolic activity of *L. mesenteroides*, resulting once again in an extended product shelf life.