

**Effect of duration and temperature of previous vacuum-packed storage on the microbiological quality of Belgian Blue meat packed in high-oxygen atmosphere**

Pedro H. Imazaki, Assia Tahiri, Georges Daube and Antoine Clinquart

University of Liège, Department of Food Science, Sart Tilman B43b, Liège, Belgium, 4000

TOPIC: Global food safety, B-1. Consumer safety

The aim of this experiment was to study the effect of duration and temperature of previous vacuum-packed (VP) storage on the microbiological quality of Belgian Blue (BB) beef packed in high-oxygen atmosphere. VP striploins from bulls (B) and cows (C) were stored at  $-1\text{ }^{\circ}\text{C}$  and  $+4\text{ }^{\circ}\text{C}$  for up to 80 days. These meats were subsequently repackaged under modified atmosphere (MA) – 70 %  $\text{O}_2$ /30 %  $\text{CO}_2$  – at different times, and stored 2 d at  $+4\text{ }^{\circ}\text{C}$  and 5 d at  $+8\text{ }^{\circ}\text{C}$ . The average initial counts in VP meats were 3.6 log CFU/cm<sup>2</sup> (B) and 2.7 log CFU/cm<sup>2</sup> (C) for total viable count (TVC) at  $+22\text{ }^{\circ}\text{C}$ ;  $< 2.0$  log CFU/cm<sup>2</sup> (B and C) for lactic acid bacteria (LAB) at  $+22\text{ }^{\circ}\text{C}$ ; 1.1 log CFU/cm<sup>2</sup> (B) and 1.3 log CFU/cm<sup>2</sup> (C) for *Enterobacteriaceae* at  $+30\text{ }^{\circ}\text{C}$  and  $< 1.0$  log CFU/cm<sup>2</sup> (B and C) for *Pseudomonas* spp. and *Brochothrix thermosphacta*. During the first 40 days of VP storage, temperature had a striking influence on microbial growth. The maximum count differences between storage temperatures were obtained at the 20<sup>th</sup> day of storage: 2.7 log CFU/cm<sup>2</sup> (B) and 2.9 log CFU/cm<sup>2</sup> (C) for TVC, 4.0 log CFU/cm<sup>2</sup> (B and C) for LAB and 3.6 log CFU/cm<sup>2</sup> (B and C) for *Enterobacteriaceae*. The difference in TVC between temperatures at the 20<sup>th</sup> day tended to disappear once the meats were repacked under MA and stored during seven days. Conversely, the difference in LAB and *Enterobacteriaceae* counts tended to be maintained after MA repackaging, showing that duration and temperature of VP storage had influence on microbiological quality of BB meat subsequently stored in high-oxygen atmosphere. Moreover, chilling at temperatures very close to the freezing point of meat during VP storage, which has already showed innumerable advantages for physicochemical quality of meat, was capital to maintain the microbiological quality of BB fresh meat during subsequent MA-packed storage.