ABSTRACT

Microbiological, chemical and physical quality changes associated with the immediate and delayed icing of trenched sardines (Amblygaster sirm) were studied under semi-commercial conditions. Batches of sardines were iced immediately on landing, 5 hours after landing and 10 hours after landing. When tested after 24 hours storage in ice the physical chemical and microbiologial quality of the fish which were iced immediately on landing and 5 hours after landing remained unchanged, while the quality of fish iced after 10 hours was poor and unsuitable for further processing. Fish iced immediately on landing contained as its dominant bacterial flora Pseudomonas spp.(41%), Micrococcus spp.(10%) and Bacillus spp. (28%). However, if icing was delayed by 5 hours the proportion of Pseudomonas, Micrococcus and Bacillus species changed to 14%, 43% and 14% respectively. This indicates that the composition and nature of the bacterial flora is effected by the type of icing treatment given.

Trenched sardines when dipped in potassium sorbate (2%) before vacuum packaging had a shelf life of 50 days at 4°C. By contrast untreated or irradiated fish had a shorter shelf life and reached rejection levels after 26 days and 22 days respectively, under similar conditions of packaging and storage. When stored at 15°C the shelf life of vacuum packed fish was 6-9 days irrespective of any of the above preservation treatments. Sardines dipped in saturated salt for 24 hours before vacuum packaging had a shelf life of over 50 days at 4°C. Unfortunately the demand for a salt saturated (5%) product is limited.

A shelf life in excess of 75 days was obtained when immediately iced and 5 hour delayed iced fish were processed using vacuum packing followed by heat sterilization. A delay in icing of the initial raw material did not have much effect on the quality of the final product. Slow peroxide oxidation was observed during storage without the development of rancidity. An F_o value of 20 minutes was obtained for the brine product, while fish packed in chilli sauce had an F_o value of 26 minutes. A percentage drained mass ranging from 75.5-77.5 was obtained for the product packed in brine.

key words: fish, shelflife, vacuum, retort pouch, microflora