

Bacteriology of moisture-enhanced pork from retail markets

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Injection of brine solutions containing polyphosphates, salt and sometimes lemon juice solids into fresh pork is being used in meat processing. The process enhances eating quality, specifically juiciness and tenderness of lean meat cuts. The needle injection disrupts the integrity of the meat surface and it is likely that the process introduces bacteria from the surfaces into the interior of the muscle. Little information is available about the bacteriology of needle injected, so-called moisture-enhanced meat cuts.

Conventional and moisture-enhanced, boneless pork chops were purchased from retail stores. In each store, chops were routinely cut from vacuum-packaged loins and packaged for retail sale. The bacteriology of the chops was determined and numbers of bacteria on moisture-enhanced chops were compared to those on conventional pork chops.

Numbers of total aerobic and psychrotrophic bacteria were the same in conventional and moisture-enhanced pork chops. Lactic acid bacteria dominated, which is typical for meat that has been stored in a vacuum-package. Significantly higher numbers of the spoilage organisms ($>1 \log \text{CFU/cm}^2$), *Enterobacteriaceae*, *Pseudomonas* spp., and *Brochothrix thermosphacta* were isolated from moisture-enhanced chops than from conventional chops. Moisture-enhanced pork chops had a higher incidence of the potential pathogenic bacteria, *Listeria* spp., *Listeria monocytogenes* and *Enterohaemorrhagic E. coli*. There were also differences in the incidence and numbers for *Listeria* spp. between stores and sampling dates.

Implication: Needle injection of brine may cause an increase in the numbers of spoilage organisms and the incidence of food-borne pathogens in pork chops. It is possible that these organisms are introduced below the surface. Careful control of the injection process is required when preparing these products and research is required to demonstrate that cooking can render moisture-enhanced meat safe for the consumer.