

# IMPLEMENTATION AND MICROBIOLOGICAL VERIFICATION OF HACCP SYSTEM IN SLAUGHTERHOUSES FOR SMALL RUMINANTS IN BULGARIA

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## Abstract

Regulation (EC) 852/2004 covers general hygiene procedures for food at all stages of the production process, from primary production to sale to the EU consumer (so-called "from-farm-to-fork approach"). The requirements of Commission Regulation (EC) 2073:2005 laying down in chapter 2 - "Process hygiene criteria" validated and verified practical application of HACCP system.

In two slaughter facilities were taken swab samples from 48 lamb carcasses during all four seasons from May 2008 to April 2009. The swab samples from 5 different areas on the carcass (outer surface of the thigh; outer surface of the chest bone; the middle of the neck; the middle part of the chest's outer surface; the internal most distal part of the chest cavity) were taken with sterile tampons Peptone water (buffered) Merckotube<sup>®</sup> (Merck). The determination of total viable counts (TVC) was done in accordance with EN ISO 4833. The number of representatives of *Enterobacteriaceae* family in cfu/mL was established in accordance with ISO 21528-2 and *Salmonella* presence according EN/ISO 6579. Data were statistically processed.

Faecal contamination was pointed as the most important critical control point (CCP). TVC was higher during the summer and autumn, especially in samples from the high-capacity slaughterhouse ( $> 6 \log^{10}$  cfu/cm<sup>2</sup>). During the colder period of the year there were lower average TVC values (4.09 and 4.32  $\log^{10}$  cfu/cm<sup>2</sup>) in the smaller and larger slaughterhouse, respectively. The values of the *Enterobacteriaceae* family microbial counts in the smaller slaughterhouse varied between 1.30 in the spring and 3.18  $\log^{10}$  cfu/cm<sup>2</sup> in the winter. At the high-capacity slaughterhouse, the variation was greater - from 1.27 in the winter to 6.05 in the autumn. *Salmonella* spp. presence was found in samples in one single lamb carcass.

The implementation and functioning of HACCP system is not just a formal act but an active system facilitating the production of quality and safe meat from small ruminants. The current results indicate that the self-control system and HACCP system in the examined facilities does not guarantee completely the fulfilment of the hygiene requirements laying down in Regulation (EC) 852:2004 and Regulation (EC) 2073:2005.

**Key words:** HACCP, Lamb, Hygiene criteria, Salmonella.