Assessment of swine carcass contamination during the slaughter procedures

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Abstract

The microbial contamination of swine carcasses through the slaughter process is substantially related to manipulation and hygiene issues during the different procedures, which work as vehicles for cross contamination. The aim of this study is to assess the carcass microbiological features at two different stages of the slaughter process (A-after scraping; B-before refrigeration), and the contamination status of several carcass areas.
In a slaughterhouse, 36 samples were taken from stage A, on the external surface of the carcass (thigh, neck, lumbar dorsal area) and 84 samples from stage B, on external (thigh, neck, lumbar dorsal area, abdomen) and internal surfaces (brisket, abdomen, pelvic area). The swine carcass surfaces were delimited with templates (100cm^2) previously sterilized using a non-destructive method with tampon gauze. All samples were analysed for mesophilic microorganisms, Enterobacteriaceae and generic *Escherichia coli.* Only on stage B samples were tested for *Staphylococcus aureus*. All methods were performed according to ISO procedures.
No significant differences ($p>0,05$) were observed between microbial values on the tested areas on stage A. However, the neck presented higher contamination by mesophilic microorganisms, 3,14 log CFU/cm^2, Enterobacteriaceae and generic *E.coli*, 0,44 and 0,09 log CFU/ cm^2, respectively. On stage B, it was observed significant differences ($p\leq0,001$) between the counts of mesophilic microorganisms. The contamination was significatively higher on the neck, external (3,03 log CFU/cm^2) and internal abdomen (2,48 log CFU/cm^2). Samples from internal and external abdomen presented higher values of Enterobacteriaceae (1,04 and m 1,54 log CFU/cm^2), and generic *E.coli* (0,64 and 0,77 log CFU/cm^2) when compared with the other surfaces. *Staphylococcus aureus* was detected in all samples, with a higher percentage on the thigh and internal abdomen area.
The results show the necessity of establishing measures to minimize the carcass contamination through better practices in the slaughterhouse.

Keywords- *Carcasses, Microbial contamination, Slaughter operations, Surfaces*

Professional Biography

Helena Patrícia Azevedo Pinto has completed her master's degree at the age of 24 in Food Engineering, specialized in Food Safety in 2019 at University of Trás-os-Montes e Alto Douro, Vila Real, Portugal. Since 2016, she has devoted her academic career to food safety, with laboratory experience in chemical and microbiological analyses of cheese, meat and

meat products. Recently, she is an analyst, conducting microbiological and chemical analyses of meat products.



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