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Reducing campylobacter jejuni on chicken skin using steam and lactic acid and influence on the aerobic mesophilic plate count

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Campylobacteriosis is the most frequently reported zoonotic infectious diseases in European Union with 212 064 confirmed human cases in 2010. The consumption of raw or undercooked poultry products is the major cause of human campylobacteriosis. Thus, the control of chicken carcass contamination becomes a crucial concern for the food industry.

Present work evaluated the effectiveness of heat (100 °C during 8 s), lactic acid (5% during 1 min) and their combination for inactivating *Campylobacter jejuni* inoculated on chicken skin. This work also evaluated the impact of each treatment on the aerobic mesophilic plate count. Residual bacteria on the skin were enumerated immediately after the treatment and after 7 days of storage at 4°C.

Results showed an immediate efficiency of steam and combined treatments on *Campylobacter jejuni* on chicken skins (with log reductions reaching 5.0 log cfu.cm⁻²) and the lactic acid showed a persistent effect during storage. Steam and combined treatments also showed a significant reduction of the aerobic mesophilic plate count (superior or equal to 3.2 log cfu.cm⁻²). Unlike the lactic acid treatment after which aerobic mesophilic counts continued to increase during storage reaching more than 5.8 log cfu.cm⁻².

Steam and combined treatments could then be the adapted treatments in case of a totally controlled process reducing re-contaminations risks post treatments. Indeed, the reduction of both the pathogen and the indigenous flora could permit to extend the shelf life of the chicken products. In case of a possible re-contamination, lactic acid treatment would be preferred. Indeed this treatment permits to preserve the indigenous flora of the skin and then the competitive effect with the pathogen.

Keywords: Campylobacter jejuni, Aerobic Mesophilic Plate Count, Steam, Lactic Acid