

Sensory Evaluation of Cured Raw Hams after Injection of *Staphylococcus Equorum* Strains During Production

Monika Gibis, Ramona Bosse, Mathias Wolz, Jochen Weiss

Department of Food Material Science, Institute of Food Science and Biotechnology, University of Hohenheim, Stuttgart, Germany

Introduction: Staphylococci are often used in combination with lactobacilli in raw sausages, as they are known for their ability to improve the flavor profile of these meat products. However, they have not been used in the production of cured raw ham, which is usually cured by dry curing, wet curing, or a combination of both (Bosse et al. 2018). The aim of this study was to accelerate the ripening process and to improve the typical aroma profiles of cured raw hams.

Material and methods: The starter cultures with different properties were inoculated by brine injection and the sensory perception was evaluated by using a sensory test with scale. The sensory evaluation was studied and compared with data from the GC-determination of volatile key flavor compounds. As starter cultures, the strains *S. equorum* LTH 7065 (source: Parma raw ham with very high lipolytic activity > 2 mm, high nitrate reductase activity >1 + <2 mM/cfu) and *S. equorum* LTH 7099 (source: Black forest ham, high lipolytic activity >1 + < 2 mm, very high reductase nitrate activity >2 mM/cfu) were used. Pork loins (*M. longissimus dorsi*) were produced by injecting brine (10% (w/w) curing salt - 0.9% NaNO₂) containing no starter culture (control) or one of the two *S. equorum* strains (~ 10⁷ cfu/mL brine) and then dry-cured for further 7 days. After smoking and drying, a post ripening step from 29th to 63rd day followed. The determination of volatile markers was performed with Headspace-Trap GC-FID (Bosse et al. 2017). The sensory evaluation of redness, saltiness, flavor smell, and flavor taste was conducted in each case with scale from very low (0) to very high intensity (10 scores).

Results: The content of the key volatile compounds increased in the time period between start (29 d) and end of the post-ripening time (63 d). The sensory test showed significantly higher scores of redness in hams inoculated with strain *S. equorum* LTH 7099 than LTH 7065, which is a result of the very high nitrate reductase activity of this strain. However, no significant differences in flavor smell and taste were observed between the different strains of Staphylococci. The strain LTH 7065 produced high level of 3-methylbutanal and butanone during the post-ripening process in all batches. The strain *S. equorum* strain LTH 7099 has comparable key volatiles than the control without starters at the end of the post-ripening time.

Conclusions: A combination of the two *S. equorum* strains from Parma raw ham and from black forest ham, both expressing high lipolytic activity and very high nitrate reductase activity should be possible. The collected results should appeal to the meat processors due to shortening of ripening time of cured meat with superior sensory quality of the final product.

References:

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