The Fat Score – Status and Potential Development of a Unique Quality Measure for pig fat in Switzerland

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For the production of high quality pork products, processors demand for firm pig fat of good oxidative stability. Twenty years ago in Switzerland a rapid titrimetric method to determine the so-called fat score (an iodine value according to Margosches) was developed as quality control measure. When the fat score was established as part of the pricing system for pig carcasses, and batches above a threshold of 62 were penalized, the fat quality quickly improved. The Swiss pig producers and feed industry were able to meet the target, by adapting the fatty acid composition of the feed, mainly the content of polyunsaturated fatty acids (PUFA). However, due to the strong positive correlation between fat score and carcass lean percentage and the increasing demand for leaner carcasses during the last years, pig producers are again struggling to provide pigs with the desired fat *and* carcass quality. Furthermore, the limitation of the fat score, giving an index value of double bonds but not the proportion of saturated fatty acids (SFA) and PUFA, which correlate more closely with fat consistency and oxidative stability, respectively, became evident. Since an FT-NIR method is now successfully applied to determine the fat score in two Swiss slaughter and processing plants, a study was launched to investigate the potential of determining the fatty acid composition and fat quality traits like consistency directly by FT-NIR. Based on 126 samples of pig fat scratched from the outer layer of the backfat at the slaughter line according to the official fat score method it could be shown that the FT-NIR method was able to precisely and accurately determine the proportion of SFA, PUFA and even selectively very long chain PUFA as well as directly the solid fat content. Therefore, the FT-NIR method provides the potential to establish more specific descriptors of pig fat quality than the original fat score and might raise opportunities to alleviate the conflict between carcass and fat quality as well as between nutritional and technological aspects of fat quality.

We gratefully acknowledge the financial support by the Hermann Herzer foundation.