

## CHARACTERIZATION OF LONGISSIMUS DORSI AND SEMIMEMBRANOSUS MUSCLE FIBRES IN NERO DI LOMELLINA AND COMMERCIAL HYBRID NEWBORN PIGLETS: PRELIMINARY DATA

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Swine farming is widely developed in Italy, especially due to the importance of this species in Italian typical food industry. Although the most common bred pigs are the commercial hybrids, it is still possible to find some native breeds, especially where the local tradition is deeply felt [1]. Recently, the genetic program of the *Nero di Lomellina*, an autochthonous swine from the area of Pavia, has been recognised by the Italian Association of Pig Breeders. These animals have rustic traits and their meat is suitable for being processed into fine cured products. The following study aimed to analyse the structure of the muscle tissue of *Nero di Lomellina* breed, with a focus on the *Longissimus Dorsi* and the *Semimembranosus* muscles of newborn piglets.

The research was carried out on five *Nero di Lomellina* that died during parturition and the data were compared with those of five commercial hybrids, dead under the same conditions. All animals were weighed and their sex reported. Samples of each muscle were partly paraformaldehyde-fixed and paraffin embedded and partly frozen. Haematoxylin-Eosin and Succinate Dehydrogenase stainings (SDH) were carried out to identify the morphology and the oxidative capacity (positive staining for red fibres and negative for white fibres) of the muscle fibres respectively [2][3]. Histometric analyses were also performed: the area, the perimeter and the number of fibres in the two muscles of both breeds as well as the positive-SDH fibres were evaluated and data statistically analysed [2][3].

Interestingly, the statistical analysis revealed different trends between the two muscles, though non-significant, except for the number of fibres in the *Longissimus dorsi*, which is significantly lower in *Nero di Lomellina* piglets ( $P < 0.05$ ). This could be an effect of the genetic selection that has been promoted in the past decades. Moreover, already at birth, the SDH-staining highlighted the presence of both red and white fibres, but quantitatively the preliminary results did not show significant differences between the two breeds.

These preliminary data in newborns may suggest possible differences in the structure of adult muscles. Further studies investigating adult samples may lead to a different muscular structure between the adults of the two breeds, which may be translated into meat products with different characteristics [4].

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- [1] O. Franci and C. Pugliese, "Italian autochthonous pigs: Progress report and research perspectives," *Ital. J. Anim. Sci.*, vol. 6, no. SUPPL. 1, pp. 663–671, 2007, doi: 10.4081/ijas.2007.1s.663.
- [2] S. Velotto, C. Vitale, and A. Crasto, "Relationship between morphometric characteristics of fibre types and adipocytes in Cinta Senese pig," *Acta Agric. Scand. A Anim. Sci.*, vol. 60, no. 4, pp. 211–218, 2010, doi: 10.1080/09064702.2010.529937.
- [3] V. Hanzlíková, "Histochemical patterns in normal and splaylegged piglet muscle fibers," *Histochemistry*, vol. 67, no. 3, pp. 311–319, 1980, doi: 10.1007/BF00692763.
- [4] C. A. Maltin, C. C. Warkup, K. R. Matthews, C. M. Grant, A. D. Porter, and M. I. Delday, "Pig muscle fibre characteristics as a source of variation in eating quality," *Meat Sci.*, vol. 47, no. 3–4, pp. 237–248, 1997, doi: 10.1016/S0309-1740(97)00055-7.