BOOK OF ABSTRACTS

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Jana Pulkrabová, Monika Tomaniová, Stefan van Leeuwen, Michele Suman, Michel Nielen and Jana Hajšlová

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USE OF CHEMICAL AND ISOTOPIC FINGERPRINTS TO ESTABLISH THE GEOGRAPHICAL ORIGIN OF "NERO DEI NEBRODI" PIG MEAT

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"Nero dei Nebrodi" pigs are an indigenous breed of Sicily, reared mainly outdoors in the Nebrodi area. Although the presence of these pigs is historically documented [1], there is little information on how the rearing area may contribute to the quality of the meat. As far as we know, no study has evaluated the composition of stable isotopes and mineral elements in "Nero dei Nebrodi" meat as a traceability tool. The aim of this study was correlated *longissimus dorsi* meat from "Nero dei Nebrodi" pigs to the geographical area in which the pigs was reared according to chemical-nutritional parameters, stable isotope composition, fatty acids and sterols profile and mineral elements. The study was carried out in samples from two different geographical areas of north-eastern Sicily: "Mirto" area (inside the Nebrodi National Park) and "Valle del Mela" area (outside the Nebrodi National Park). The analysis was conducted on a total of 20 meat samples from pig females divided into two homogeneous groups: the 'Nebrodi group' (NG) and the 'External Nebrodi group' (ENG). The results showed that 51 out of 80 variables were significantly different ($p \leq 0.05$) between NG and ENG. Chemical-nutritional parameters such as brassicasterol, campesterol and n-7 and n-9 fatty acids, were found significantly higher in the NG samples, due to the rich vegetation endemic to the Nebrodi area [2]. High levels of Pb were found only in the samples from the ENG group, probably due to the different anthropic activities present in the "Valle del Mela" area [3]. Furthermore, the δ13C, δ15N, δ2H and δ18O isotopic ratios of defatted meat were statistically different ($p<0.01$) between NG and ENG animals. This highlights that the change in dietary composition and drinking water consumption affects the quality of the meat and allows differentiation between the samples from the two study sites.
The existence of a link between the meat samples and their geographical origin, a necessary condition for the traceability of this particular product, has been demonstrated. In conclusion, this study could be used as a reliable tool to authenticate the 'Nero dei Nebrodi' breed and to use these correlations for traceability and consumer protection against fraud and commercial disputes.

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