

CHARACTERISATION OF WILD GAME MEATS: FROM ANIMAL WELFARE TO NUTRITIONAL, ORGANOLEPTIC AND HYGIENIC QUALITY

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The product characterisation is a key step in the identification of traceability guarantees and for the food safety of a product. These requirements are essential for the marketing of the product, which on the one hand must not damage the consumer and on the other hand must be characterized by a clear and certificated origin also as a guarantee of the production chain that it is meant to structure.

Wild game meat comes from animals that were born, lived and culled in wild condition, without any direct human contact, without force-feeding systems and without any pharmacological or vaccine treatment.

This makes the wild game meat definitely healthier and also more ethical than meat reared in farms where animals were born in captivity and are bred on an intensive feeding regime in order to increase production (maïs, soybean, silage, food supplements etc.); where the wild game meat undergoes vaccine treatments against communicable diseases and pharmacological therapeutic and preventive treatments and it exposed to stress caused not only by the kind of breeding, but also by the phases of slaughtering (loading, transport, unloading, slaughter line, stunning and bleeding)

Furthermore wild fauna has no environmental impact on the habitat considering soil consumption, production of manure and CO₂ emission. The only negative issue about the presence of wild fauna on the territory is the eventual conflict with human activities generated by road crashes, crop damage and by the use of the domestic livestock same grazing areas.

In addition, wild fauna causes damages and alterations to forests regeneration and to the grass sub-strata even over 2000 m.

It follows that, in order to reduce these conflicts, a proper management of wild fauna as hunting resource is essential, also trying to respect a proportionated number of wild fauna on the territory.

As far as it regards animal welfare, it is also necessary to compare farm animals slaughtering stages to selective culling stages deriving by hunting activities. Although the farm animal welfare requirements established by community regulations and european guidelines in slaughtering stages are extremely rigorous, it is inevitable that some stressing factors can impact not only on animal welfare, but even on the quality on the final product (movement, transport and entering in slaughterhouse).

However, although nowadays at a social level hunting is poorly considered by public opinion in all respects, the culling/slaughtering of the subject is such that it does not affect animal physiology; indeed the hunter must cull the animal by using precision rifle with scope. In this way, no stressing factors caused by manipulations, transport or other factors can affect the animal and the shot has to kill the subject immediately reaching it in vital areas (heart/lung).

It follows that the product quality, considering animal welfare, organoleptic and hygienic characteristic is directly proportional to hunter's ethical values.

For this reason, as a part of the project "Filiera Eco-alimentare" funded by Cariplo Foundation, some training courses have been organized in order to improve hunters attitude and activities related to culling and carcass management stages.

However, during the carcass management, any danger must be considered and monitored in order to contain risk levels and to guarantee food safety of the final product: physical and chemical dangers (presence of foreign bodies like bones and/or bullet sliver and their possible chemical dissolution in the matrix), biological dangers (incomplete bleeding; bacterial contamination caused by evisceration on the field and during the trasport; improper management of cold-chain during the transport).

It follows that, considering the analysis led during the 2015/2016 hunting season on 177 chamois (*Rupicapra rupicapra*), 79 roe deers (*Capreolus capreolus*) and 129 deers (*Cervus elaphus*), it was possible to consider the present management of the carcasses, and, consequently, the level of animal welfare, within the context of *ars venandi*.

Data show how the 70.6% of chamois, the 82.3% of roes and the 66.7% of deers were killed by one single lethal shot. Considering ammunition kind, 30.0% of hunters used lead-free bullet, and no difference emerged between Pb bullets and lead-free bullets in relation to lethality of the shot.

The firing distances are averagely higher for the chamois (average 163 m – max 450 m) compared with roe (average 101 m – max 300m) and deer (average 129 m – max 356). It is remarkable that more than 33% of hunters who shot down at least one prey, are not member of any fire range.

Considering these data, which are currently submitted to an improvement process through product formation and certification, it is necessary to point out the organoleptic qualities of wild game meat, that shows a health-conscious/healthy relation between SFA, MUFA e PUF, with high values of Omega3 (chamois 53,48 mg/100g, roe 20,28 mg/100g, deer 94,70 mg/100g) well balanced with the Omega6, keeping in all the species $\Omega 6/\Omega 3$ ratio under 4. Also the content of Conjugated Linoleic Acid (CLA), given by the alimentation of green forage (values between 3.36 and 7.83 mg/100g), was found to be high.

Laboratory surveys on meat stock life have shown how vacuum conservation of the product at a temperature of 2-3 °C (wet-aging) since over 30 days is possible by using an anaerobic environment with pH of 5.2, which can potential bacteria that could lay on the meats because of an improper management.