

restaurant) included as fixed factors in the model. In comparison with men, women had lower expectations (6.8 vs 7.3;  $p < .002$ ) but, at the end of the test, both sexes appreciated the ewe meat in a similar manner (average score: 7.5). As for the four considered parameters, men and women valued in the same way the product. Consumers did not find differences between the traditional market meat and the Halal market meat. Considering the consumer test location, taste resulted better in both restaurants, while a higher score for tenderness was given in the conventional restaurant. The interaction between ewe market and consumer test location was significant in all considered parameters. The Halal steak cooked in both restaurants was the most appreciated. Excluding catering, the halal meat was always more tender than the traditional market meat. The ewe meat of the test was generally appreciated, reaching a mean value close to 7 for the overall liking.

In conclusion the ewe meat, even if not often appreciated in Tuscany, was estimated by the consumers both as traditional and as Halal meat. Considering these results, it is suggested that the Tuscan market may be a good opportunity for the ewe meat.

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## O120

### Geese reared in organic vineyard: qualitative traits of breast meat

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Agroforestry, by mean of suitable crops/animals interactions, could provide several benefits (economical, environmental, biodiversity, etc.) allowing the maintenance of agricultural landscape which is also useful for tourism activities. Considering the wine vocation of Italian territory, breeding geese in the vineyard could be considered a suitable agroforestry model. Thus, the aim of this study was to evaluate the

quality and the oxidative status of geese meat reared in vineyard. One hundred and twenty geese were organically reared in 1 ha of vineyard (Experimental Group) in an organic wine farm (Perugia, Italy), whereas others 120 were intensively reared (Control Group) in the experimental farm of Perugia University. Birds were raised until the slaughter age (180 d) and, after slaughter, the *pectoralis major* muscle was dissected for analyses. The chemical composition, fatty acid profile and lipid oxidation of breast meat (TBARS,  $\alpha$ - and  $\gamma$ -tocopherol, retinol) were determined. Data were analyzed by PROC ANOVA with rearing system as fixed effects. The breeding system significantly affected some traits of the breast meat; in particular the vineyard-reared geese showed a lower lipid amount (2.23% vs 4.32% respectively) and a higher content of antioxidants. Vineyard geese had also higher *n-3* long chain polyunsaturated fatty acid content (3.60 vs 2.14%), but unexpectedly, also a higher level of TBARS compared to the control one (0.18 vs 0.10  $\mu\text{g MDA/g}$ ). Furthermore, the geese reared in the vineyard showed meat darker and less tender. Such trend could be due to higher kinetic activity of such geese and also to the pro-oxidant activity of copper. Indeed, in organic vineyard copper treatments are allowed. Accordingly, the copper content of the geese liver was higher in geese reared in vineyard, although within the limits of EU regulations. Further researches are necessary to understand better the effect of this rearing system on *in vivo* oxidative traits and on other aspects of the production (economic and environmental impact, etc.).

## O121

### Enhanced antioxidant capacity and reduced lipid oxidation in cooked rabbit burgers added with *Zingiber officinale*

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Nowadays ready-to-cook products represent an important food productions in terms of market share. Rabbit meat could be a suitable matrix to obtain meat products with nutraceutical purpose for its high content of protein and amino acids of important biological values, and for its low fat content and the high percentage of unsaturated fatty acids. Natural antioxidant additives are extensively evaluated as alternatives to synthetic antioxidants due to their great acceptance by the consumers. *Zingiber officinale* Roscoe (ginger) is widely used

as a spice and contains several compounds with biological activities such as gingerol, paradol and shogaols. In order to evaluate the effects of ginger powder on lipid oxidation (TBARS – thiobarbituric acid reactive substances) and fatty acids profile (SFA, MUFA, PUFA, PUFA $\omega$ 3 and PUFA $\omega$ 6) three formulations of rabbit burgers were compared (C, control; G1, ginger 1%; G2, ginger 2%). Burgers (100 grams) were cooked in a preheated oven at 163 °C to an internal temperature of 71 °C. Results of TBARS showed that burgers added with ginger were less susceptible to oxidation than control burger (0.19, 0.09 and 0.13 mg malondialdehyde/kg respectively for C,

G1 and G2;  $p < .05$ ). FA profile of ginger (high in unsaturated FA, mostly C18:2 $\omega$ 6) modified burgers' FA profile. PUFA and PUFA $\omega$ 6 were significant higher in burgers added with ginger than the C ones (PUFA: 27.46, 32.57 and 33.08,  $p < .05$ ; PUFA $\omega$ 6: 23.11, 21.18 and 28.06,  $p < .01$ ; respectively for C, G1 and G2). The low level of SFA in ginger powder affected the percentages of saturated FA of burgers; C burgers showed higher level of SFA than G1 and G2 (45.28, 40.62 and 41.25, respectively;  $p < .05$ ). The addition of ginger to rabbit burgers decreased lipid oxidation and modified the FA profile increasing the PUFA content at the expense of the SFA content.