

## ABSTRACT

One of the main challenges of today's society is the development of the livestock sector by improving the conditions of animal husbandry and ensuring the production of high quality products. In recent years it has been observed that the intensive growth rates of farm animals have led to the emergence of several pathological conditions in which oxidative stress is involved. It is therefore understood that through the overall well-being of animals can increase their productivity, product quality and therefore improve their commercial value and eliminate consumer concerns about product quality. In view of all the above, the importance of investigating oxidative stress markers in the tissues and products of farm animals becomes clear. In the present dissertation the levels of redox status in the tissues of 144 small ruminants (48 goats and 96 sheep) and 38 cattle as well as in the blood and milk of 40 domestic dairy sheep were evaluated. The sheep and goats belonged to the following three main groups: domestic goat breed, fat-tailed sheep (Chios breed) and thin-tailed sheep breed. The cattle belonged to the Limousin, Charolaise and Simmental breeds, while the domestic dairy sheep belong to the Greek breed Karagouniki, and to the French breed Lacaune. The analysis included variables of developmental stage, breed and sex. Tissues used in the analysis include: blood, liver, diaphragm, quadriceps and psoas major. The samples measured indicators related to antioxidant capacity, oxidative damage to lipids and proteins, as well as the effect on the antioxidant system of cell cultures. At the same time, a correlation analysis was performed in order to investigate predictors of antioxidant capacity and quality of meat in the blood of the respective animals. The results showed statistically significant changes in the different variables taken into account in the analysis, particularly demonstrating the fragile redox equilibrium at critical periods of farm animals such as weaning. In addition, the variable of the breed seems to play a decisive role in the levels of redox status of the animals as evidenced by the predominance in the antioxidant profile of Limousin, fat-tailed sheep breed and Karagouniki dairy breed.

Based on the above, it is emerged the need for investigating further the basic levels of redox status indicators of farm animals and their subsequent identification as a predictor of meat quality with new innovative methods. The research in this field will contribute , on the one hand, to increase the value of meat and on the other hand to the welfare

of farm animals but will also be an incentive for the further development of the livestock sector.