Polyphenols in Pig farming

Excessively intensive pig production processes force animals into an environment of fragile oxidative-reducing equilibrium.

With the productive population of a pig farm on the verge of oxidative stress, the most innovative and effective dietary intervention to reduce the risk of metabolic imbalance is the addition of powerful antioxidants to the daily diet of animals.

This addition prevents the effects of oxidative stress and thus prevents collapse of the animal's immune system and susceptibility to diseases of metabolic or biological etiology.

The most important group of natural antioxidants are plant polyphenols and if we are in the Mediterranean basin they are of course the olive polyphenols, with the contribution of terpenic acids.

Olive polyphenols and especially hydroxytyrosol contribute in many ways to the health of aerobic organisms. They exhibit strong antioxidant activity, protective properties in the cardiovascular system and the intestinal mucosa from inflammatory conditions. Also, the hepato-protective properties of terpenic acids contribute to the robustness of pig populations of all ages and production directions, reducing the need for therapeutic and preventive treatments.

Sows

As for sows, in addition to the general effects of polyphenols on their metabolism, polyphenols contribute particularly to the well-being and productivity of sows, as they ensure:

- Adequate support and protection of their cardiovascular system.
- Enhancing the perfusion and oxygenation of the endometrium and placenta of sows and preventing "intrauterine fetal hypoxia" syndrome.
- Normalization of the estrous cycles of animals.
- Multiple pregnancy and high birth weight of piglets.
- Reduction of mummified fetuses and neonatal deaths.
- Increased number of weaned piglets.

Pigs

With the presence of olive phenolic compounds in the diet of fattening pigs we shall observe the following:

- Reduction of vulnerability and sudden deaths.
- Improvement of the performance of the carcass and its quality characteristics.
- Carcass with increased antioxidant potential and shelf life.
- Drastic reduction of the appearance of PSE-meat.

PSE - meat (Pale, Soft, Exudative)

Pale, Soft, Exudative meat, or PSE meat, describes a carcass quality condition known to occur in pork, beef, and poultry. It is characterized by an abnormal color, consistency, and water holding capacity.

PSE-meat occurs shortly after slaughter, mainly in genetically susceptible pigs and is due to a combination of two biochemical factors occurring at the same time:

- The low pH value of meat.
- Meat high temperature.

Stressful conditions before slaughtering pigs increase their body temperature to rise to 44 oC instead of the normal 37 oC. This also results in the high temperature of the carcass immediately after slaughter.

Also, the same stressful conditions are the cause of excessive lactic acid synthesis, which in synergy with post-slaughter glycolysis, causes a rapid drop in muscle tissue acidity to pH = 6 instead of pH = 6.7 which is its normal value.

Because there are many stressors before slaughtering pigs (transport - slaughter odors - brain shock, etc.) any oxidative instability leads the animals to a state of oxidative stress which has negative consequences on the quality of the carcass.

Systematic administration of polyphenols in the diet of pigs has been shown to dramatically reduce the risk of oxidative stress and of course reduce the risk of post-mortem carcass damage and minimize financial loss.