

Chapter V: Mineral and vitamin nutrition

1. Minerals

There are a great many mineral elements involved in the constitution of an organism. They are classified according to their importance as follows:

- Macro-elements, or major elements: calcium, phosphorus, chlorine, sodium, potassium, magnesium and sulfur
- Trace elements: iron, copper, zinc, manganese, cobalt, iodine, fluorine, selenium and molybdenum.

1.1. Importance

Mineral elements are normal constituents of protoplasm and various tissues of the body; some, such as the skeleton, are rich in mineral elements. Furthermore, these elements are involved in the functioning of the body.

- Functional roles: Mineral elements play a direct role in the functioning of the body. They contribute significantly to a certain balance of the internal environment, in particular at the blood level: osmotic pressure regulating fluid exchanges or acid-base balance of the blood.
- Plastic role: resulting from the importance of bone for animal production and reproduction, and which is considered as a reserve used in the most critical periods.

1.2. Nutritional deficiency effects

Trace elements are effectors of the organism, some are most often found in insufficient quantities in food, others in excess. While the problems are related to deficiencies, these manifest themselves as follows:

- On the skeleton: by slowing down growth and deformations.
- On the functioning of the body: through metabolic disorders due to imbalances in the internal environment (macro elements) or to deficiencies in various enzymes (trace elements), which leads to the appearance of several diseases: acidosis, edema, tetany.
- On production: affects the production of milk, meat, eggs, from a qualitative and quantitative point of view.

2. Vitamins

They are organic substances, easily destructible, unavailable in very low doses in the body. They belong to carbohydrates (vitamin C), lipids (vitamin D) and proteins (vitamin group B), vitamins are sensitive to heat, light and oxidation.

Vitamins are classified into:

- Fat-soluble vitamins (soluble in fats): vitamin A or growth vitamin, D or anti-rickets vitamin, vitamin E or fertility vitamin or K the anti-hemorrhagic

- Water-soluble vitamins (soluble in water): vitamin C, B vitamins

Effects of nutritional deficiency

The total absence of a vitamin (avitaminosis) leads to the death of the subject.

Partial lack (hypovitaminosis) leads to poor health of the animal and a drop in its production level.

Apart from the main conditions of a good diet which have just been studied, there are still a certain number of factors whose importance should not be neglected because they can influence the effectiveness of the diet.

These are essentially: food additives, water intake, ballast intake and absence of toxicity of the rations.