SCIENTIFIC OPINION
EFFECTS OF DIET FORMULATIONS CONTAINING PLANT OR ANIMAL PROTEINS ON VITAL SIGNS, GROWTH, WELFARE OF BROILERS AND ENVIRONMENT

CONCLUSIONS:

• Many research show that development, growth, live weight, vitality and health are similar to broilers whose diet is entirely based on plant raw materials (plant protein, respectively) and those whose diet also includes feed materials of animal origin.

• The lack of unquestionable difference in development and other vital characteristics of broilers in feeding with plant or animal proteins or in their mixing in bird diet is indicative that the nutritional characteristics of the ingredients used in composing the two types of feed diets are appropriate and of high quality, and the birds compensate for the differences between them.

• Taking into account the possibility of phase feeding of birds that can, on the one hand, contribute to optimizing the cost of protein procurement for broilers as well as the expected effects on their development, which on the other hand would have a positive effect on bedding/litter quality and the environment.

• It is necessary to take measures to limit the releases of nitrogen, phosphorus and ammonia emissions in order to protect the environment and to strictly apply the European legislation for the protection of the environment.

• In order to achieve a balanced ration in the plant-based diet, while at the same time overcoming wet litter and high emissions of ammonia, nitrogen and phosphorus, that could violate the welfare of poultry and polluting the environment, the following strategic approaches should be considered, to:

- **avoid excess raw protein in the diet**, which can be achieved with a good knowledge of the amino acid composition of feed materials and balancing the poultry diet by **adding certain essential amino acids**; this mechanism could be applied to restrict or deny the use of animal protein in the diet of poultry;
- apply **phase feeding** of birds with rations whose protein is reduced with the age of the birds;
- use the advantage of **enzymes supplementation** (phytase, carbohydrases, proteases) to improve digestibility of nutrients and to reduce the effect of non-starch polysaccharides and phytate on the diet entirely plant based; that also reduces total excreted nitrogen and total excreted phosphorus;
- use of **high-digestible inorganic phosphates** for partial replacement of traditional sources of phosphorus in feed;
- consider the content of some **minerals in feed materials** and limit their amount to what is necessary to prevent increased water intake;
- test and monitor feed materials for the **presence of mycotoxins** and to use binders when necessary;
- use the addition of trace elements - **zinc, biotin and binding mineral clays, vitamins** in the diet as well as addition of **high energy products** to meet the increased needs of the organism of industrially kept poultry.

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