

## ASSESSMENT OF THE CONTENT OF MACRONUTRIENTS IN GRAIN-INCLUDED AND GRAIN-FREE DRY DOG FOODS

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**Abstract.** Currently, a dynamic development of the pet food industry is observed. The nutritional value of dog foods is important, because both the deficiency and the excess of an ingredient in the diet may contribute to the development of diseases. Among the analyzed contrasts (GF versus GI) determined for individual macronutrients, only the content of NFE was the same in both types of food (GF and GI). This study highlights non-compliance of popular pet foods with current EU guidelines.

**Keywords:** extrusion, dog food, nutritional value, pet food, quality.

For proximate composition, the European Pet Food Industry Federation (FEDIAF) nutritional guidelines provide minimum recommended levels (MRL) for protein and fat only, not for other ingredients and no safe maximum levels. Taking the above into account, the aim of our study was to evaluate the proximate composition of the 35 grain-included (GI) and grain-free (GF) dry dog foods, taking into account compliance with the FEDIAF nutritional guidelines. Representative samples of each product were ground in a laboratory mill KNIFETEC type 1095 (Foss Tecator, Höganäs, Sweden). The proximate composition (dry matter – DM, crude protein – CP, ether extract – EE, crude ash – CA, crude fiber – CF) was determined in the ground samples according to Association of Official Analytical Chemist (AOAC) methods. All analyzes were performed in duplicate. Nitrogen-free extracts (NFE) were calculated as follows:  $NFE = 100 - (\text{moisture} + CP + EE + CA + CF)$ , all values are expressed in g/kg DM. Statistical analyses were carried out using the STATISTICA 13.3 software. The significance of differences between the means was assessed using the Newman-Keuls test at  $P = 0.05$ . The average protein content differed statistically significantly in grain-free and grain-included foods (317.8 and 308.5 g/kg DM, respectively).

The indicated range of variability has been divided into 14 homogeneous groups, within which the means do not differ statistically significant. The average level of fat

(expressed as ether extract, EE) differed statistically significantly in grain-included (142.6 g/kg DM) and grain-free foods (149.1 g/kg DM). Furthermore, one dog food with a fat level of 34.4 g/kg DM was the only food that did not meet the MRL. The variability of EE content in the tested foods was divided into 24 homogeneous groups. The mean level of crude fiber in the grain-free foods (71.2 g/kg DM) did not differ significantly than that in the grain-included (68.9 g/kg DM). The grain-free foods contained more crude ash than the grain-included foods (88.9 g/kg DM and 76.3 g/kg DM, respectively). The average NFE content of the grain-free foods significantly lower than that of the grain-included ones (373.1 g/kg DM and 404.7 g/kg DM, respectively). The lowest value was obtained for grain-free food (190.8 g/kg DM), and the highest for grain-included food (574.3 g/kg DM).

Among the analyzed contrasts (GF versus GI) determined for individual macronutrients, only the content of NFE was the same in both types of food (GF and GI). This study highlights non-compliance of popular pet foods with current EU guidelines. In the case of macronutrients, the results in some cases were multiples of the minimum recommended levels. However, current nutritional guidelines do not set maximum levels for proximate components in dog food. Any improperly balanced diet carries a risk of negative health effects.

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## **PROXIMATE COMPOSITION AND MINERAL PROFILE OF SPRAY-DRIED PORCINE PLASMA AS A VALUABLE PROTEIN SOURCE IN ANIMAL NUTRITION**

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**Abstract.** Spray-dried animal plasma (SDAP) is a common ingredient in animal nutrition, particularly for young or weaned animals such as piglets, calves, and lambs. It is a highly digestible and palatable source of protein, essential amino acids, vitamins, and minerals. Our research has confirmed that SDAP is a very good source of crude protein (75.43 g/100 g), however it contains low level of crude fat (1.22g/100 g). The level of crude ash is relatively high – 12.65 g/100 g, and nitrogen-free extracts – 7.50 g/100 g.

**Keywords:** blood product, feed, livestock, nutritional value, SDAP.