

(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.

Animal plasma is produced by collecting the blood of healthy animals, typically pigs, at a slaughterhouse or other processing facility. The blood is then processed to remove the red blood cells and other solids, leaving a plasma fraction that is then spray-dried. This process creates a fine powder that can be easily mixed into animal feed. The use of SDAP in animal nutrition can help to improve animal health, growth, and performance, particularly of young animals. It can help to reduce the incidence of post-weaning diarrhea and other gastrointestinal problems, which can be common in young animals as they transition to solid feed. It provides a highly digestible source of protein and other nutrients that can support the development of muscle and other tissues, improve immune function, and help to maintain a healthy gut microbiome. As SDAP is a blood-derived feed ingredient, its safety is frequently tested, especially during periods of emergence or re-emergence of animal diseases in different regions of the world. SDAP is a widely used and accepted ingredient in animal nutrition, and is generally considered safe. The aim of this study was to analyze the chemical composition and mineral profile of the spray-dried porcine plasma. Proximate composition was determined using ISO 17025 accredited methods based on AOAC. The phosphorus content was determined by the Egner-Riehm colorimetric method on a Specol 221 apparatus spectrophotometer (Carl Zeiss Jena, Germany). An Atomic Absorption Spectrometer apparatus (iCE 3000 Series, Thermo Fisher Scientific) was used to determine potassium and sodium - by means of emission flame spectroscopy, and calcium, magnesium, zinc, iron, molybdenum and manganese - by means of atomic absorption flame spectroscopy.

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. Overall, blood products are good source of nutrients, especially for the high content of essential amino acids, but also for the high content of minerals, especially iron. Tested SDAP contains 12.60 mg of Ca in 100 g, 14.01 mg of Mg in 100 g, 1.88 g of P in 100 g, 4.72 g of Na in 100 g and 0.55 g of K in 100 g. In case of microelements, the level of Fe is 6.36 mg in 100 g, 1.91 mg of Zn in 100 g, 0.51 mg of Mn in 100 g and 51.39 mg of Mo in 100 g. Minerals present in SDAP are very digestible and soluble and, consequently, highly available for the animals. The presented results prove that SDAP can be a good source of protein in animal nutrition. SDAP can provide additional benefits, such as improving intestinal health and supporting an efficient immune system response locally at the intestine and systemically, therefore reducing the need for nutrients to be diverted for use to support the activation of the immune system and diverting them towards productive functions, thereby improving overall performance and the well-being of animals.