

The benefits of chicken plasma powder in pet food applications



By Geert van der Velden, Innovation Manager at IQI Trusted Petfood Ingredients

Spray-dried animal plasma is well recognized by the pet food industry as an important functional and palatable ingredient. It is used as a source of protein and has excellent gel formation and emulsifying properties, as well as very good water binding capacity. While animal plasma has a high degree of acceptance by pets, such as cats and dogs, it also offers advantages for their health and well-being. Of the plasma powders available in the market, those of chicken origin offer the most unique benefits.

Important nutrient

Plasma is a completely natural and nutritious ingredient for use in pet food. Often raw diets for pets are based on the natural diet of a wild cat or dog, which consists of whole prey, such as chicken. When they catch and eat their prey, they consume as much as possible, including muscle meat, organs and blood. Plasma is the vital liquid component of blood that holds the blood cells in suspension.

Plasma is a nutrient-rich clear fluid that remains when blood cells and platelets are separated from blood. Another component of blood is hemoglobin, an iron-containing metalloprotein in red blood cells that carries oxygen from the lungs to the rest of the body. Hemoglobin is used as a source of protein and a colorant in the pet care

industry, but lacks a number of the health benefits offered by plasma.

Improving pet food properties

Spray-dried animal plasma (SDAP) has applications in both wet and dry pet food, as well as in semi-moist snacks and treats. SDAP is traditionally used by the pet food industry to improve the functional characteristics of meat emulsions in wet pet food applications. SDAP improves the standardization of the quality of the final cooked product by efficiently absorbing quality differences between batches of the raw meat products.

Because of its high protein content of 70 to 80 percent, SDAP is used to increase low content levels of (functional) proteins in raw materials for pet food.

	Plasma protein	Collagen protein	Wheat gluten	Carrageenan	Egg Albumin
Origin	Animal	Animal	Vegetable	Vegetable	Animal
GMO free	Yes	Yes	By choice	Yes	Yes
Solubility	+++	+ / ++	+	+(+)	+++
Gel formation	+++	-	++	++	+++
Water binding capacity	++	-	++	+++	++
Emulsifying properties	+++	-	++	-	++
Palatability	+++	+	-	0	+
Protein content	70-80%	> 95%	> 70%	n.a.	> 80%

Figure 1: Characteristics of functional ingredients in wet pet food processing conditions

Furthermore, SDAP has excellent gel formation and emulsifying properties, as well as very good water binding capacity compared to other binders, such as wheat gluten, egg albumen, collagen powder (pork) or carrageenan mix (see figure 1).

Last but not least, it greatly improves the palatability of pet food, making it the preferred ingredient of cats and dogs. Palatability studies show that pet food containing plasma increases daily intake compared to pet food containing wheat gluten (see figure 2).

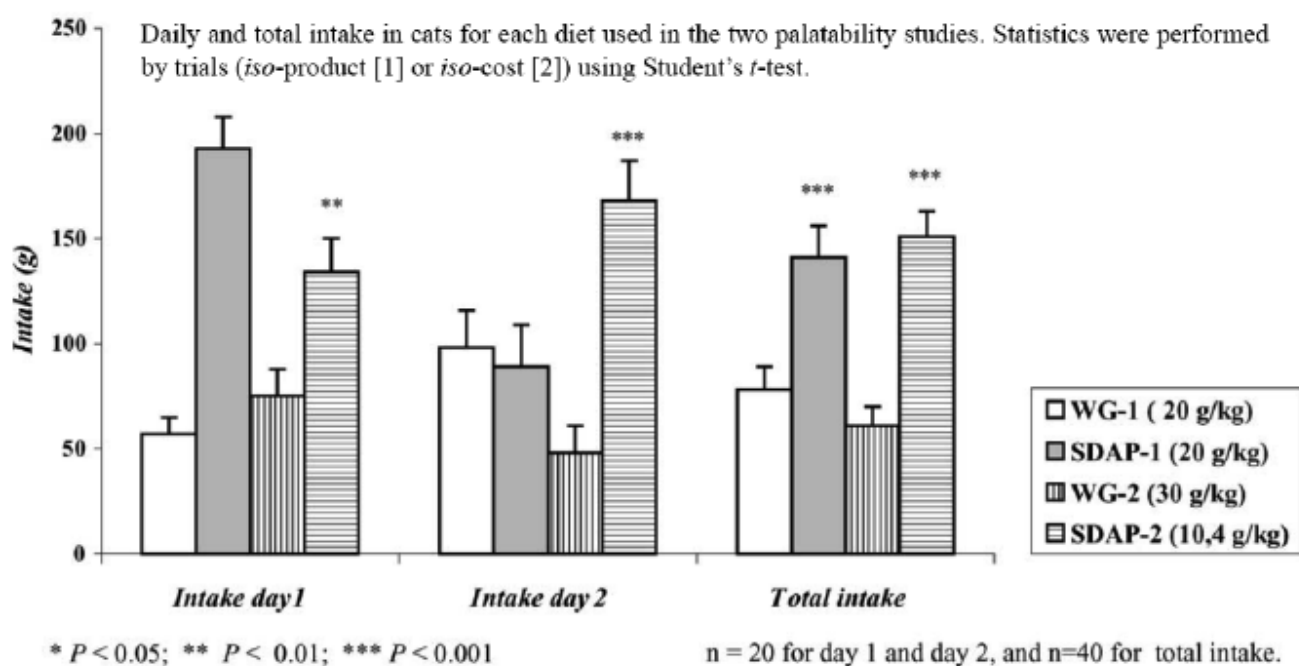


Figure 2: Palatability of plasma protein (SDAP) versus wheat gluten (WG) in wet pet food for cats (source: Polo et al., 2005)

Plasma source

SDAP is available for pet food from different sources, including those of porcine, bovine, ovine and chicken origin. Of the different available plasma powders, those of chicken origin have the highest acceptance in the market.

Chicken plasma powder is the most versatile ingredient. Also, chicken has no restrictions in terms of pet parents' religious considerations.

Health benefits

Plasma potentially offers several advantages for the health and well-being of pets, depending to some degree on the applications and processing conditions. Plasma is rich in important vitamins and minerals and an excellent source of essential amino acids, in particular tryptophan, which is used in the biosynthesis of proteins. Dog food containing plasma has been shown to improve digestion and decrease the amount of fecal output.

Plasma powder also has a high immunoglobulin G (IgG) content, which is the main type of antibody found in blood circulation. IgG protects the body from infection by binding many kinds of pathogens, such as viruses, bacteria and fungi, thereby supporting the immune system. This has a favorable impact on gut health, reduces joint inflammation and reduces allergic reactions that cause itching and scratching.

A high content of IgG is particularly favorable for weaker or older cats and dogs. In particular, elderly dogs often suffer from joint inflammations, gastrointestinal disorders, digestive problems and overall loss of quality of life. Studies suggest that animal plasma can be a very effective component of pet food to improve the animals' quality of life and help them to maintain activity and movement by reducing limping, for example.

Anti-allergenic properties

Plasma sourced specifically from chicken contains a particular type of immunoglobulin Y (IgY) that is unique to chicken and similar to globulins derived from egg protein. Similar to IgG, IgY is effective in improving gut health and supporting the immune system in fighting pathogens, and has the added benefit that it does not trigger the allergenic response in humans.

According to scientific research, IgY contains antibodies that can bind to the Fel d1 protein, the major cat allergen produced in the cat's saliva and sebaceous glands. This inhibits the ability of Fel d1 to trigger an allergic response in a person with an

allergen sensitivity to cats without affecting the cat's overall physiology. It therefore enables people to manage their allergies to cats while keeping them in their home.

The production of chicken plasma powder

Chicken plasma powder is made from chicken blood sourced at slaughterhouses, where it is collected, anticoagulant is added and then it is cooled. The blood is then transported to the processing plant, where it is filtered before initial storage. Using a centrifuge, the blood is separated into its component parts (fractionation), including plasma and hemoglobin. The separated plasma is concentrated via membrane filtration and then spray dried to form plasma powder.

Production efficiency

SDAP also offers several advantages for improving production efficiency. Due to the excellent binding quality of SDAP, it helps to improve chunk quality and reduce production losses. Only egg albumen compares to SDAP in this respect, while production losses are much higher for wheat gluten, collagen powder and carrageenan mix binders.

When SDAP is heated, it forms an irreversible and stable gel through protein denaturation. Gels provide texture and consistency, improve water-retaining capacity and retain flavors and nutrients. The strength and elasticity of this gel reduces crumbs in chunk production, thereby reducing production losses. It also offers emulsion stability to avoid fat release during heat treatment.

The benefits of spray-dried chicken plasma powder

Pet health benefits:

- Greatly improves palatability / high degree of acceptance by pets
- Rich in important vitamins, minerals and essential amino acids
- High content level of immunoglobulin Y (IgY)
- Does not trigger the allergenic response

Production benefits:

- High protein content of 70 to 80%

- Excellent gel formation and emulsifying properties
- Very good water binding capacity
- Helps to improve chunk quality and reduce production losses

Market acceptance:

- Clean label for pet food producers that want 100% chicken origin
- No restrictions in terms of pet parents' religious considerations

When using SDAP in pet food production, careful attention should be given to the right balance between the health benefits of SDAP and production efficiency. Gut health benefits are most pronounced when the product does not receive too much heat treatment and are only relevant for non-sterilized conditions or post-extrusion applications.

Chicken plasma powder solution from IQI Trusted Petfood Ingredients

Together with its partner DeVeris, IQI Trusted Petfood Ingredients is the world's only supplier of pet food-grade chicken plasma powder to the pet

food industry. Our source of SDAP is specifically of chicken origin, which is generally the most preferred in the market. The chicken plasma offered by IQI maintains all of the biological functionality of the albumin and globulin proteins. IQI Trusted Petfood Ingredients' chicken plasma powder has a typical inclusion level of 2.5% for wet pet food and 1 – 5% for dry pet food and snacks, depending on the application.

For more information on chicken plasma powder and the finest ingredients for the pet food industry, please visit our [website](#) or contact us directly.

Want to know more?

<http://deveris.pl/>

<https://www.sciencedirect.com/science/article/pii/S0377840116301316>

About IQI Trusted Petfood Ingredients

IQI Trusted Petfood Ingredients is a global distributor of premium-claim ingredients to the top brands in the pet food industry. Founded in 1994 as a trading company in raw pet food materials, today IQI offers an extensive variety of services to aid and assist our customers and suppliers worldwide. IQI Trusted Petfood Ingredients employs highly skilled personnel, owns and operates a global network of logistical hubs, and relies on a global supply network to obtain the purest natural resources available.

For IQI, quality is key. IQI Trusted Petfood Ingredients goes to great lengths to ensure the quality of its products and also invests a great deal in maximizing the quality of its partnerships. Since this business is all about trust, IQI needs to bond with its partners to succeed. By working closely with both its customers and suppliers, IQI creates full transparency in the supply chain. IQI oversees

and controls every step in the process from source to shelf and supplies products that are pure and traceable to their source.

About Geert van der Velden

Geert van der Velden is IQI Trusted Petfood Ingredients' Innovation Manager responsible for Business Development, generating new products and concepts that meet the needs of existing and new customers. Geert has more than 25 years' experience in the international pet food industry and has gained knowledge and experience in many sections of IQI's business.

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