



WHITEPAPER

# BOOST PETS' IMMUNITY WITH PROGLOBULIN<sup>®</sup>



BIOFUNCTIONAL  
**PROGLOBULIN<sup>®</sup>**



Natural Ingredients. Smart Solutions.

**sonac**

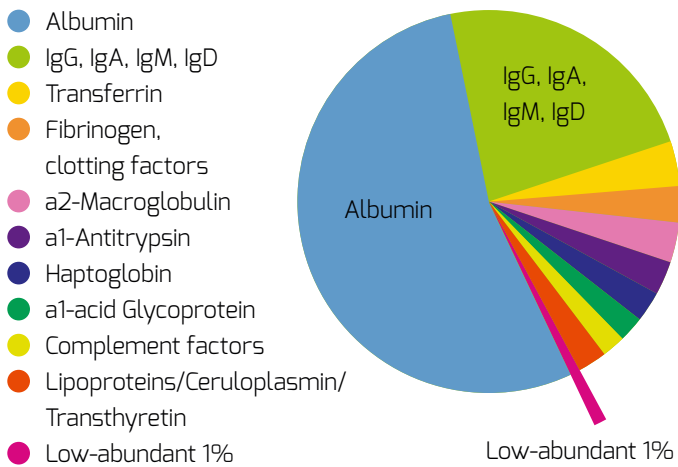
# PROGLOBULIN®

Proglobulin® is a natural and palatable source of active immune-factors used as an ingredient in health products to boost nutrition for cats and dogs. When added to an animal’s diet, it can enhance gastrointestinal balance, support the immune system and improve their overall well-being.

## A BIOFUNCTIONAL INGREDIENT

Proglobulin® is a high-quality, bioactive, spray-dried blood plasma composed of protein (70-80%), minerals (10%), water (7%) and fat (2-3%). Most of the proteins are albumins and globulins. A portion of these globulins are antibodies (gamma globulins) which have a central role in a healthy immune system. Antibodies are predominantly immunoglobulin G (IgG), and to a lesser extent IgA and IgM. Besides the immunoglobulins, there are a large number of other bioactive components present in plasma. These components are immune factors (transferrin, interleukins and cytokines), cellular factors (Insulin like Growth Factors [IGF 1], [IGF 2], Epidermal Growth Factor [EGF] and Transforming Growth Factor Beta [TGF β]).

Figure 1: Concentration of bioactive components in plasma

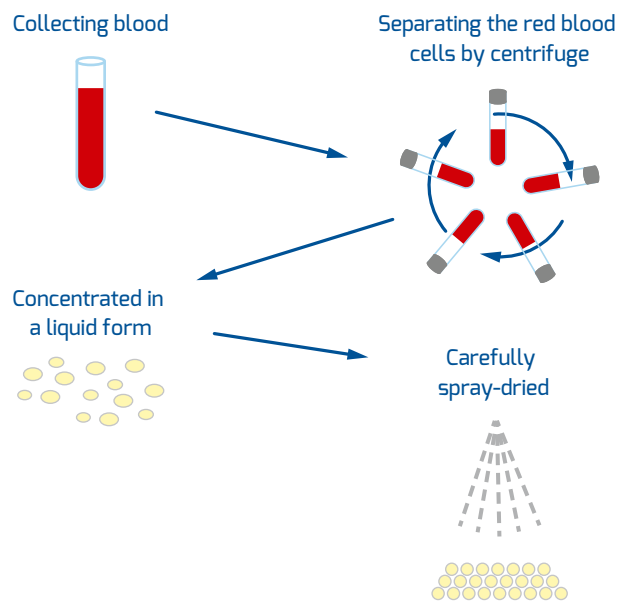


## PRODUCTION PROCESS OF PROGLOBULIN® ASSURES PRESERVATION OF BIOFUNCTIONAL COMPONENTS

Porcine, bovine or ovine blood used to produce Proglobulin® is obtained from certified slaughterhouses and from healthy animals approved for slaughter for human consumption.

The blood is collected in a hygienic manner, kept in a liquid state by adding anticoagulants, and refrigerated until processed. Red blood cells and plasma are separated by centrifugation. The liquid plasma is then concentrated and carefully spray-dried to preserve its bio-functional properties.

Figure 2: Production process of Proglobulin®



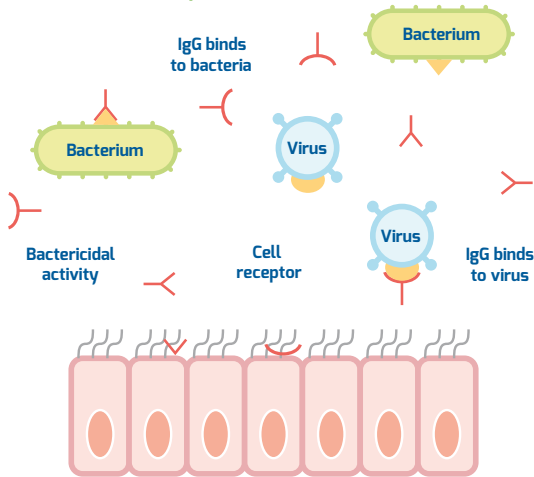
### PROGLOBULIN® ANTIBODIES DEFEND AGAINST PATHOGENS

Transfer of IgG (humoral immunity) from mother to child is a natural given. Parental IgG is delivered to the offspring by different routes depending on the species. Dogs and cats obtain IgG after they are born through colostrum via a specific intestinal transport mechanism.

The humoral immunity gives resistance against infection with pathogens. These pathogens would otherwise provoke infections and cause abdominal distress, pain or even diarrhea.

Antibodies are crucial to defending the body against foreign pathogens and substances trying to invade the organism. The plasma antibodies ingested from food containing Proglobulin® specifically bind to protein, including pathogens. The pathogens are then unable to infect the cells of the gut wall and are cleansed by other components of the immune system (Figure 3).

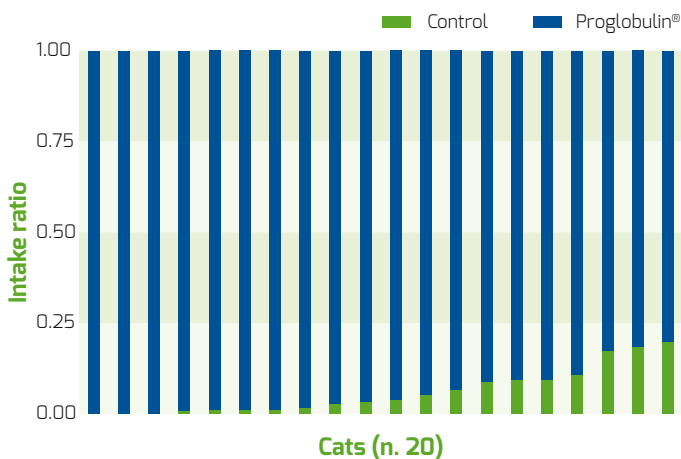
**Figure 3: Ingested plasma antibodies (bind to pathogens and prevent their penetration of the cell wall towards the blood stream)**



### PROGLOBULIN® IS HIGHLY PALATABLE TO CATS

There is a 18 to 1 intake ratio of Proglobulin® to Control in cats.

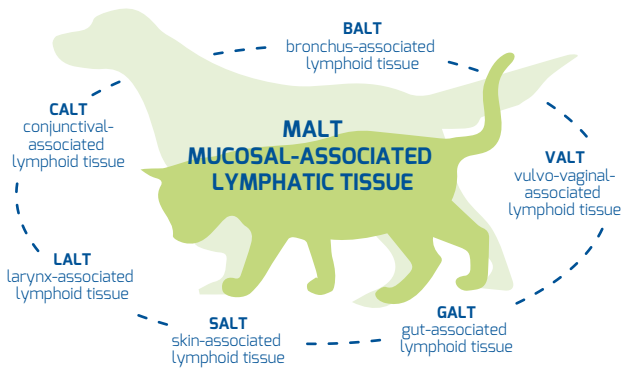
**Figure 5: Most cats prefer kibbles coated with 2% of Proglobulin® diluted in fat over those coated only with fat.**



### IMMUNE-ACTIVE COMPONENTS OF PROGLOBULIN® SUPPORT THE ENTIRE IMMUNE SYSTEM

In addition to the humoral immunity (antibodies), the cellular part of these immune cells (lymphocytes) can be found in lymphoid tissue. Gut-associated lymphoid tissue (GALT) is a part of the mucosa-associated lymphoid tissue (MALT, Figure 4). Scientists are starting to understand the link between gut mucosa and other systems of the body. The different lymphoid tissues are connected by the circulatory system. This means that the dietary effects of bioactive components affecting GALT can be manifested for instance in bronchus-associated lymphoid tissue (BALT), nasal-associated lymphoid tissue (NALT) or skin-associated lymphoid tissue (SALT).

**Figure 4: Mucosal-associated lymphatic tissues are connected.**

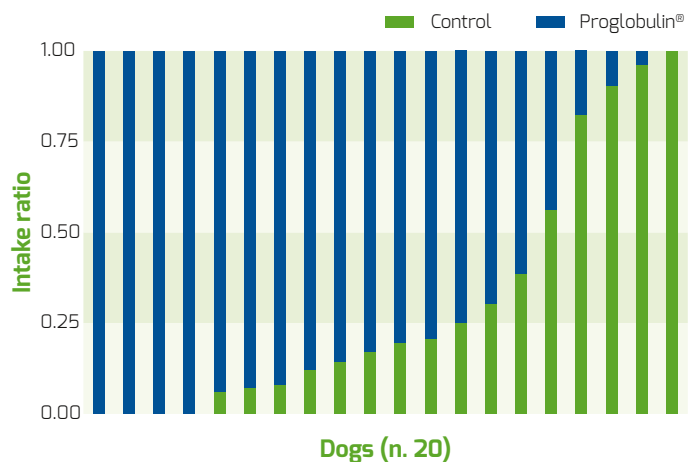


Plasma-active components influence the cellular immune system of the gut mucosa. This effect on the GALT can influence other organs. As a consequence, when the immune-active components in plasma stimulate the cellular immune system in the gut, an increase of resistance could be seen in other organ systems. Likewise, a suppression of inflammatory responses in the gut give a reduction of inflammation in other organs.

### PROGLOBULIN® IS PALATABLE TO DOGS

There is a 2 to 1 intake ratio of Proglobulin® to Control in dogs.

**Figure 6: Most dogs prefer kibbles coated with 2% of Proglobulin® diluted in fat over those coated only with fat.**





## PROGLOBULIN® MAINTAINS STRENGTH AND HEALTH IN DOGS AND CATS

The Immuno-active components of plasma are well-known for their benefits in gut health of animals. By reducing inflammation, plasma helps to maintain normal gut function, to support overall immunity, and to sustain long-term well-being.

Pet food formulations enriched with Proglobulin® are especially recommended for puppies and kittens, training and working dogs, as well as in foods for sensitive animals with digestive disorders such as bloating, diarrhea, or constipation. Due to the favorable amino acid composition and palatability of Proglobulin® (Figure 5, 6), it is a beneficial component for each pet food recipe.

## PROGLOBULIN® APPLICATION

To assure the immunological functionality of Proglobulin® proteins, a limited heat treatment is advised.

The biofunctionality of Proglobulin® can be preserved in dry pet food applications through post-extrusion spraying on kibbles or by mild heat treatments for snack and treat formulations.

### FACTS & FIGURES

- Unique, 100% natural ingredient: Proglobulin®
- From animal sources (porcine, ovine, bovine)
- Contains plasma proteins, antibodies, immunoglobulins, immune factors and growth factors
- Supports the immune system
- Palatable to cats and dogs
- Beneficial component of pet food recipes

Appearance: Powder (spray-dried)

## BRINGING TOGETHER PRODUCTS, PEOPLE AND PETS

Operating on a unique residuals-to-resources concept, Sonac develops biofunctional, technofunctional and nutritional ingredients that benefit the petfood industry, pet owners and pets. We operate at the intersection of these three different stakeholders' worlds.

We are a leading producer of reliable, sustainable ingredients worldwide, with representation on 4 continents and activities in 60 different locations. As a dependable one-stop shop for smart, volume-driven, ingredient solutions, our constant aim is to help manufacturers improve recipes and reach the highest levels of quality and environmental performance.

Sonac is part of Darling Ingredients.



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**DARLING**  
INGREDIENTS