



trusted petfood
ingredients

Finding the right ingredients to support health and wellness claims

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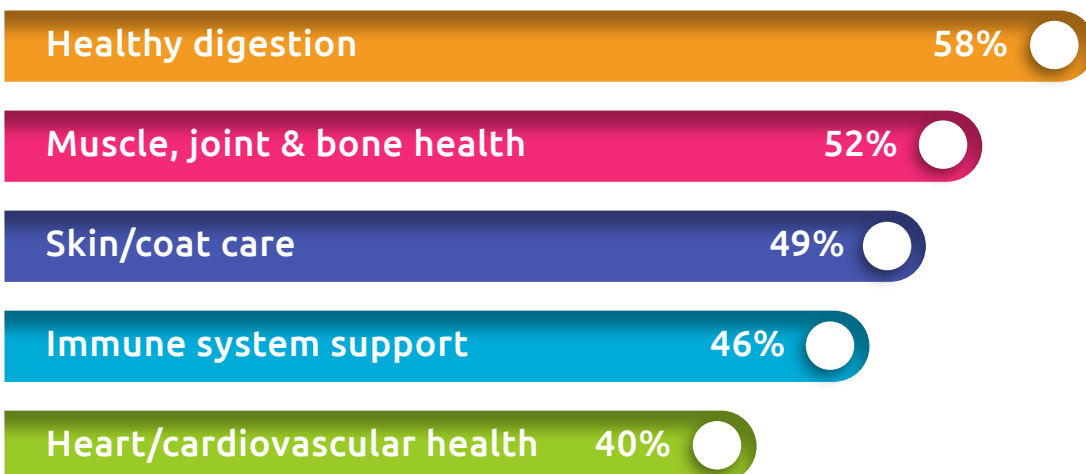
Pet parents feel a great responsibility towards their cats and dogs, and want to keep them comfortable and healthy. One way to do this is by giving them pet food that contributes to their health and well-being, targets specific health issues, or caters to the specific needs of their age group and environment.

There are many opportunities for pet food manufacturers to develop and market pet food that meets these demands. In this white paper, we take a closer look at what specific claims for health and well-being entail, what benefits specific ingredients can provide for the health and well-being of cats and dogs, and what new ingredients are on the market.

Pet health claims can relate to many different aspects, from supporting a healthy digestion to supporting a healthy skin and coat, targeting specific health issues, or catering to the needs of specific breeds or their age group. As the total number of pets around the world increases and pet parents take increasingly better care of their pets, resulting in a strong aging pet population, this accelerates market demand for pet food with specific health and well-being benefits.

To ensure that cats and dogs get the right nutrition for their age, condition, and breed, the ingredients in pet food need to support things like a healthy digestive system and cognitive functioning, and help prevent, treat, or mitigate different kinds of health issue. For cats and dogs, the physical and physiological changes due to aging and their environment influence the condition of their skin, coat, and teeth, for example, cause deterioration in joint health and functionality, reduce their ability to digest and absorb nutrients, and may result in either weight gain or loss. Many of these issues can be controlled or mitigated by choosing the right ingredients for specific needs.

Health claims on pet food packaging can help pet parents make the right choices for their cats or dogs. The most important/popular health claims, according to a recent survey amongst almost 1,400 consumers in North America, are:



The following chapters will explain these claims in more detail.

Did you know?

There are two types of health claim. In this white paper, we discuss soft claims. Products with soft claims often contain one or more specific ingredients that are proven to have a beneficial influence. Hard claims, on the other hand, are much more specific and require significant scientific agreement among qualified experts that the claim is supported by the totality of publicly available scientific evidence. The EU's PARNUTS (particular nutritional needs) legislation is the legal framework used by food business operators when they want to highlight the particular beneficial effects of their products in relation to health and nutrition, either on the product label or in advertising. Hard claims therefore need to meet specific EPA requirements. They are also more specific in the sense that they require a certain amount of the active ingredient within the product.

1. HEALTHY DIGESTION

In recent years, the importance of gut health has become more widely known and is now being referred to as the foundation of our health. The same applies to our pets. There are hundreds of species of bacteria in the intestines of mammals, including cats and dogs, each of which plays a specific role in health and well-being. It is therefore of crucial importance to pay specific attention to the gut when looking at pet food and supplements.

1.1 Prebiotics, probiotics and postbiotics

There is a range of ingredients that support gut health. The two most familiar products in this range are prebiotics and probiotics. Both are important for overall health but have different roles.

Prebiotics are substances that come from different types of carbohydrate, mostly fiber, which neither humans nor animals can digest. The beneficial bacteria in the gut thrive by eating this fiber. Prebiotics help to digest food more efficiently and offer an effective reinforcement against digestive disorders, such as diarrhea and inflammatory bowel disease.

Prebiotics can be found in different plant-based sources, including certain specific ingredients, such as Miscanthus grass, which contains Xylooligosaccharides (XOS) prebiotics. An exception among plant-based sources of prebiotics is the Galacto-oligosaccharides (GOS) prebiotic, which offers effective protection against pet intestinal disorders. Made from lactose found naturally in mammalian milk, GOS is the prebiotic of choice in human infant nutrition and a science-based choice for pet food. This product is available in powder and liquid form.

Prebiotics acts as food for probiotics, which aid food digestion. These live bacteria can also be found in certain foods or supplements and can therefore be added to pet food directly. After the body has digested them, postbiotics are formed.

Postbiotics have recently emerged as another group of beneficial compounds that can help improve gut health. Postbiotics have been linked to several health benefits for the gut, the immune system, and various other aspects of health. Postbiotics are preparations of inanimate micro-organisms and/or their components. These include nutrients, antimicrobial peptides that slow down the growth of

harmful bacteria, and volatile short-chain fatty acids that help healthy bacteria to flourish. A combination of pre-, pro-, and postbiotics provides optimal gut health support. A prebiotic effect can be achieved by using certain kinds of dietary fiber, which is another important functional ingredient for good gut health.

1.2 Dietary fiber

Dietary fibers come in many shapes and sizes, and from many different plant-based sources and ingredients, but the main distinctions in functionality are between soluble versus insoluble fibers and fermentable versus non-fermentable fibers. These different kinds of dietary fiber are equally important to cats and dogs, but have specific functionality and unique benefits that should be taken into account, such as health benefits, total fiber content and composition, palatability, and technical properties. Realizing the health benefits, including good gut health and a lower risk of different kinds of disease, depends on the kinds of fiber, their physical structure, the total fiber content, and fiber composition in different kinds of ingredient.



Soluble dietary fibers for use in pet food are available from many different plant-based sources and ingredients, such as carrot, oats, peas, beans, apples, beet, and seaweed. Insoluble dietary fibers for use in pet food are also available from a range of different natural sources, such as Miscanthus grass, wheat bran, corn fiber, beet pulp, soybean hulls, carrot, or seaweed.

1.3 Protein digestibility

Besides additional supplements, it is also important to look at protein quality within a diet to aid a healthy digestion. Some proteins are harder to digest than others. The digestibility of a protein is dependent on the physical shape of the protein and the relative ease with which peptide bonds can be hydrolyzed. In general, milk and eggs have the highest true digestibility values of approximately 97%, followed by meats, fish, and poultry. Dried animal protein powders benefit from improved digestibility, natural flavor and preservation of the raw materials compared to traditional rendered protein meals.

Digestibility of protein and amino acids from plant protein sources are usually lower than for animal protein sources but can still provide a complete amino acid profile when combined properly. Tapioca pellets, for example, is a crop that has been used in the feed industry in Europe for many years. Today, they are an important carbohydrate in grain-free pet food diets.

Did you know?

A dog has a longer and therefore more efficient digestive tract than a cat. This makes it more important for cat food to contain a better protein quality with high digestibility.

The new product on the block in terms of digestibility is plant-based fermented protein. This is produced at a state-of-the-art fermentation facility using non-GMO soybean meal, which undergoes a proprietary process. This produces a significant amount of short-chain peptides and free amino acids, which confer excellent palatability properties. The presence of biologically active factors may increase gut microbiota, reduce intestinal inflammation, and boost metabolic processes.

2. MUSCLE, JOINT & BONE HEALTH

2.1 Collagen and collagen peptides

The second commonly used health claim is 'muscle, joint, and bone health'. Collagen promotes bone development and healthy joints for mobility, as well as other benefits, including supporting a healthy skin and coat. In short, bones, joints, and connective tissues require collagen to stay healthy. Animals produce their own collagen, but as they age, collagen production slows down. Exposure to environmental toxins, smoke, or UV rays also negatively affects collagen production. Functional chicken collagen proteins, for example, contain collagen, which forms a protective layer around the organs. Functional dried chicken proteins are made from food-grade pure chicken with no use of by-products and take the form of a fully soluble, nutritional powder with a very high protein content. In most products, this content is about 80%. Chicken is also rich in collagen, has low levels of fat and ash, has very good functionality, and is very palatable to both cats and dogs. Next to ingredients that contain collagen, like chicken, there is also a new version to this trend: collagen peptides. These are made up of short chains of amino acids derived from collagen. Collagen peptides are therefore processed in a way that makes the amino acids easier to absorb. Research has shown that collagen peptides can improve skin elasticity, hydration, and increase bone density.

2.2 Omega-3s

When looking at muscle, joint, and bone health, not only collagen is important, but also long-chain omega-3 fatty acids. The intake of these acids contributes to healthy joints and overall mobility, as well as having numerous other positive health effects. It also supports brain development in puppies and kittens, strengthens the immune system of cats and dogs, reduces inflammation,

increases the ability to fight cancer, benefits heart health, and contributes to a healthy skin and coat. Omega-3s are also beneficial for cardiovascular health and mobility. Cats and dogs of different life stages, breeds, and health conditions may need additional fatty acids to support skin and coat health, mobility, and to enhance their immune system. We will dive into these aspects in the next chapter.

3. SKIN AND COAT CARE

3.1 EPA and DHA

As discussed, both collagen and long-chain omega-3 fatty acids are important to promote a healthy skin and coat, and have been recognized by the EU as meeting the particular nutritional needs (PARNUTs) of animals. Countless studies have shown that eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) long-chain omega-3 fatty acids have wide-ranging positive effects on the health of cats and dogs.

Fish oil is a popular source of omega-3, while different kinds of fish, such as sardines, actually accumulate their omega-3 reserves by consuming microalgae. As a pet food ingredient, algae DHA is an even more efficient and sustainable source of DHA long-chain omega 3 fatty acids. In particular, microalgae grown under controlled conditions through heterotrophic fermentation offer a fully traceable, sustainable, clean, and high-quality source of DHA long-chain omega-3 fatty acid – with a higher concentration of omega-3s and lower levels of heavy metals and other contaminants compared to salmon oil or crude fish oil.

4. IMMUNE SYSTEM SUPPORT

4.1 Plasma powder

A healthy microbiome is essential to immune health in all species. Studies show that at least 80% of the immune function happens in the digestive tract for which a healthy digestive track is the foundation (see health claim 1). Next to that, spray-dried animal plasma is becoming well recognized within the pet food community for its positive effects on the immune system. Spray-dried chicken plasma, for example, is 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. Plasma is rich in important vitamins and minerals, essential amino acids, and immunoglobulin G (IgG), which protects the body from infection. Of the different plasma powders available on the market, chicken plasma powder is the most versatile ingredient and has the highest acceptance in the market.

4.2 Omega-3s again

Alongside plasma powder, the long-chain omega-3 fatty acids EPA and DHA can have a tremendous beneficial effect on the immune system. Omega-3s inhibit an enzyme called cyclooxygenase (COX), which produces the prostaglandin hormones that spark inflammation. DHA is more effective at

reducing inflammation than EPA, but both play a role. Especially senior pets can benefit from this fatty acid as it reduces the symptoms of arthritis.

4.3 Astaxanthin

Astaxanthin is a relatively new ingredient within the pet food market, but its popularity is increasing. This ingredient is very beneficial to the immune system. As an antioxidant, astaxanthin plays an important role in fighting viruses and bacteria, and is used by the immune system to protect against so-called free radicals: unpaired electrons that accumulate in cells as a by-product of metabolism. Astaxanthin protects all parts of the cell as it positions itself across the entire cell membrane. Unlike vitamin E, which is another antioxidant, astaxanthin protects from multiple free radicals at a time. Its antioxidant strength is up to 6,000 times more potent than vitamin C and 800 times stronger than Coenzyme Q10 (CoQ10), which has become quite popular within the health sector over the past few years. Coenzyme Q10 is a nutrient that exists naturally in the body, acts as an antioxidant that protects cells from damage, and plays an important part in the metabolism.

5. CARDIOVASCULAR HEALTH

5.1 Omega-3

Omega-3s are beneficial to cardiovascular health in several ways. They reduce triglycerides, a type of fat in the blood. They also slow the build up of plaque, a substance comprising fat, cholesterol, and calcium that hardens and can block arteries, and help to slightly lower blood pressure. Heart disease in dogs is also associated with chronic, high inflammation. Omega-3 can reduce this inflammation and be a factor in preventing cardiovascular issues.

5.2 Beta-glucans

Next to the obvious omega-3s, beta-glucans are water-soluble dietary fibers that have been shown to play a supportive role in heart health. They can be obtained from barley, oats and wheat. Particularly in cereals, beta-glucans present as linear polysaccharides, classified as soluble fibers. Beta-glucans positively influence physiological and metabolic processes in the body, such as satiety stimulation, reduction of blood glucose, and cholesterol concentrations, as well as body weight reduction. These effects may significantly contribute to the prevention and treatment of disorders such as obesity, which is the most commonly observed nutritional problem in dogs.

5.3 Taurine and astaxanthin

Taurine is another supplement that supports cardiovascular health in dogs and cats. It is a sulfur-containing amino acid that is essential for the proper functioning of the bodies of mammals, including cats and dogs. Unlike cats, which always need taurine as a food supplement, dogs are generally able to synthesize taurine from other amino acids in their diet. However, because of genetic differences between breeds, changing diets, health issues, or old age, dogs can suffer from taurine deficiency,

which may lead to the heart condition dilated cardiomyopathy (DCM). Combined with omega-3 fatty acids and L-carnitine, taurine is ideal for supporting heart health in breeds that are prone to cardiac stress.

Astaxanthin and its derivatives have been documented to have cardiovascular protective effects after administration both orally and intravenously, and across several animal species. It also reduces oxidative stress and inflammation, known contributors to the pathophysiology of atherosclerotic cardiovascular disease.

HEALTH & WELLNESS SOLUTIONS FROM IQI TRUSTED PETFOOD INGREDIENTS

Together with its different suppliers, IQI delivers a range of pet food ingredients that support the health and wellness of cats and dogs. These include high omega-3 fish oil, algae DHA, full-fat krill meal, chicken meat powder (CMP), chicken liver hydrolysate (CLH), chicken plasma powder, fibers, and taurine (see table 1).

Table 1: The five most popular health and wellness claims and the IQI ingredients that can meet these special needs

The most popular health and wellness claims and the IQI ingredients that can meet these special needs	
Healthy digestion:	
<ul style="list-style-type: none"> • Prebiotics • SPC Oat Performance • Insoluble fibers 	<ul style="list-style-type: none"> • GOS*, IQI seaweed blend or pure kelp • stimulates endogenous production of Protein-AF • cellulose, ligno cellulose*, miscanthus fiber and functional carrot fiber
<ul style="list-style-type: none"> • Immunoglobulins (IgG) • Highly digestible proteins 	<ul style="list-style-type: none"> • chicken plasma powder • various sources of hydrolyzed, spray dried, low biogenic amines animal & marine protein sources
<ul style="list-style-type: none"> • Plant-based fermented protein 	<ul style="list-style-type: none"> • highly digestible & palatable plant protein
Muscle, joint & bone health:	
<ul style="list-style-type: none"> • Collagen peptides • Omega 3 	<ul style="list-style-type: none"> • chicken, porcine & bovine collagen peptides • fish and algae based EPA & DHA and krill meal
Skin/coat care:	
<ul style="list-style-type: none"> • Omega 3 • Astaxanthin 	<ul style="list-style-type: none"> • fish and algae based EPA & DHA and krill meal • algae or krill based
Immune system support:	
<ul style="list-style-type: none"> • Omega 3 • Immunoglobulins (IgG) • Astaxanthin 	<ul style="list-style-type: none"> • fish and algae based EPA & DHA and krill meal • chicken plasma powder • algae or krill based
Heart/cardiovascular health:	
<ul style="list-style-type: none"> • Omega 3 • Astaxanthin • Beta-glucans 	<ul style="list-style-type: none"> • fish and algae based EPA & DHA and krill meal • algae or krill based • natural soluble dietary fiber ingredient from oat

*not available in the USA



Want to know more?

[IQI white paper 'The benefits of fish oil as a source of long-chain omega-3 fatty acid for pet food'](#)

[IQI white paper 'Microalgae as a clean source of long-chain omega-3 fatty acid for pet food'](#)

[IQI white paper 'The benefits of chicken plasma powder in pet food applications'](#)

[IQI white paper 'Seaweeds as a rich source of prebiotic dietary fibers and important nutrients for pet food'](#)

[IQI white paper 'Full-fat krill meal: excellent natural source of nutrients for pet food'](#)

[IQI white paper 'The benefits of insoluble cellulose fibers as an ingredient in pet food'](#)

[IQI white paper 'GOS prebiotic pet food ingredient stimulates a healthy gut'](#)

[IQI white paper 'Careful consideration of taurine as a conditionally essential supplement in pet food'](#)

ABOUT IQI TRUSTED PETFOOD INGREDIENTS

IQI Trusted Petfood Ingredients is a global provider 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 develop innovative new products. IQI 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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