DENTAL CARE

ADULT CAT

A SCIENTIFIC SUPPORT PAPER

When fed Dental Care, 86% of owners saw an improvement in their cat's oral health.

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WHY IS DENTAL HEALTH IMPORTANT FOR CATS?

Dental health is essential for cats as it directly influences their overall health, comfort, and quality of life.

One of the primary concerns is the prevention of periodontal disease, which is one of the most common health issues in cats.

According to Royal Veterinary College (RVC), (2025), studies report that approximately 70% of cats by the age of 2 develop some degree of periodontal disease. This condition begins with the build-up of plaque on the teeth, which, if left untreated, leads to gingivitis (gum inflammation). As the disease progresses, it can develop into periodontitis, where the gums recede and form pockets of infection, ultimately resulting in tooth loss (Veterinary Oral Health Council [VOHC], 2019).

Good dental hygiene in cats is essential not only for maintaining oral health but also for preventing pain, discomfort, and long-term complications.

Cats can suffer from various dental issues, such as abscessed teeth, infected gums, and tooth decay, all of which can be extremely painful and may interfere with everyday activities like eating, chewing, or grooming. This pain can significantly affect a cats' overall well-being, leading to weight loss, reduced appetite, and decreased activity levels (VOHC, 2019).

In addition to managing pain, maintaining oral hygiene is crucial for preventing tooth loss. When left untreated, dental problems can lead to the destruction of the structures supporting the teeth, including the gums and jawbone. The accumulation of plaque and tartar can weaken these structures, eventually causing teeth to loosen and fall out (AVMA, 2020).

Tooth loss can further hinder a cat's ability to chew properly, potentially resulting in malnutrition or feeding difficulties (Petfinder, 2021).

Dental care is also important for preventing infections. A cat's mouth contains a wide variety of bacteria, and when their teeth or gums are damaged, it provides an entry point for these harmful bacteria to invade the body (VOHC, 2019). Infections such as abscesses or gum disease can cause swelling, pain, and further complications if left untreated.

Another important aspect of maintaining your cat's dental health is preventing bad breath, also known as halitosis. Bad breath is often caused by the buildup of plaque and tartar, which harbour bacteria in the mouth (Boldan, 2024).

Regular dental care including nutritional strategies can help prevent the accumulation of bacteria and reduce the risk of halitosis (American Veterinary Dental College [AVDC], 2020).

Dental health is also critical for preventing systemic health problems. The bacteria that grow in an infected mouth can enter the bloodstream and spread to other parts of the body, leading to serious issues in organs like the heart, kidneys, and liver. Infections that travel from the mouth to other parts of the body can result in conditions such as heart disease, kidney problems, and even liver failure (Boldan, 2024).

By maintaining your cat's oral health, you reduce the risk of these harmful effects, thus promoting better overall health (American Animal Hospital Association [AAHA], 2019).

THE IMPORTANCE OF BIOAVAILABLE AND BIOACTIVE PEPTIDES FOR DENTAL HEALTH

Proteins are large molecules composed of individual 'building blocks' called amino acids.

After eating food containing protein, the process of protein digestion begins as enzymes released in different parts of the gastrointestinal tract break it down into protein hydrolysates: short chains of amino acids called peptides and free amino acids.

This enables these building blocks to be absorbed into the body where they can be recombined to build new proteins.

Saliva contains a wide variety of proteins that play crucial roles in oral health, including digestion, protection, and immune function. Some of the key proteins found in saliva include lysozyme, lactoferrin amylase, proline-rich proteins (PRPs), mucins, host-defence peptides, and various immunoglobulins (Chandler M, 2014).

These proteins contribute to the maintenance of oral health by facilitating digestion, protecting oral tissues, and supporting the immune system.

For instance, salivary amylase initiates the breakdown of starches, while PRPs help in the formation of the acquired enamel pellicle, and mucins lysozyme and lactoferrin provide a protective barrier against microbial adhesion.

Additionally, host-defence peptides including antimicrobial and immunoglobulins play significant roles in the oral immune defence system (Valle et al., 2011).

Historically it was believed that only free amino acids were absorbed from the gastrointestinal tract by specific amino acid transporters whereas it is now recognised that the majority of amino acids are absorbed from the intestine as di- and tri-peptides by the broad-specificity peptide transporter PepT1 (Fei et al., 1994).

Di-peptides and tri-peptides are most abundant in the molecular weight range of 0.2–0.25 kDa and 0.3–0.4 kDa, respectively.

Research has shown that intake of proteins that have already been hydrolysed (peptides) are more readily absorbed from the digestive tract than intact protein and even individual amino acids (Maebuchi et al., 2007; Zhao et al., 1997).

COLLAGEN PEPTIDES AND PERIODONTAL HEALTH

MOLAR SHOWING PERIODONTAL DISEASE

A HEALTHY MOLAR

COLLAGEN PEPTIDES SHOWN TO IMPROVE PERIODONTAL HEALTH.

By enhancing collagen production, collagen peptides may help accelerate recovery and improve periodontal health. The results of the study showed that those who received collagen peptides exhibited a more substantial reduction in clinical signs of periodontal inflammation. (Zdzieblik et al., 2022).

Collagen is a fundamental structural component of the extracellular matrix in the gingiva, periodontal ligament, and other periodontal supporting tissues (Frantz et al., 2010).

Consequently, collagen-derived peptides have attracted considerable interest due to their potential role in connective tissue maintenance, repair, and periodontal health.

Periodontal health depends on a complex balance between the structural integrity of dental supporting tissues and the regulation of local inflammatory responses. (O'Neill et al., 2023).

In a randomized controlled trial, Zdzieblik et al. (2022) investigated the effects of collagen peptide supplementation (Verisol® B) in 39 patients with chronic periodontitis who also received professional mechanical plaque removal (PMPR).

Compared with the placebo group, participants receiving collagen peptides showed significantly greater reductions in bleeding on probing (BoP), gingival index (GI), and periodontal inflamed surface area (PISA). These findings suggest that collagen peptide supplementation may support gingival tissue repair and enhance the anti-inflammatory effects of conventional periodontal therapy.

Additional support for the potential role of collagen peptides in periodontal health comes from a study in Beagle dogs with dental biofilm-induced gingivitis.

Dogs receiving collagen tripeptide (CTP) supplementation exhibited improvements in capillary loop morphology, reduced capillary hyperaemia, and a higher collagen fibre-to-inflammation area ratio compared with placebo-treated animals, suggesting enhanced gingival tissue health and regenerative capacity (Yamamoto et al., 2024).

These findings indicate that collagen-derived peptides may influence periodontal tissue homeostasis through mechanisms involving connective tissue regeneration and modulation of local inflammatory responses.

Although direct evidence in cats is currently lacking, evidence from both human and canine studies suggests that collagen peptides could be a beneficial supplement for individuals with periodontal diseases by enhancing an accelerate recovery and improve periodontal health.

ANTIMICROBIAL PEPTIDES IN GINGIVAL TISSUE

Antimicrobial peptides (AMPs) are naturally occurring proteins that play a crucial role in the body's defence against microbial infections, tissue remodelling, and regulation of inflammation, especially in the gingival (gum) tissues

These peptides, including cathelicidins, α-defensins, and β-defensins, are produced by various cells in the body, including those in the gingival epithelium and fibroblasts, and are vital for both immune defence and tissue health. (Leonard, 2011).

One important AMP found in human's gingival tissue is LL-37, which has been shown to stimulate gingival fibroblasts.

These cells produce extracellular matrix proteins, including collagen.

Upon LL-37 stimulation, fibroblasts also secrete growth factors such as basic fibroblast growth factor (bFGF) and hepatocyte growth factor (HGF), promoting tissue regeneration.

In addition to enhancing innate immune defence, LL-37 supports gingival homeostasis by stimulating collagen and extracellular matrix production, thereby preserving the integrity and structural strength of gingival tissues (Fabbri and Berg, 2019).

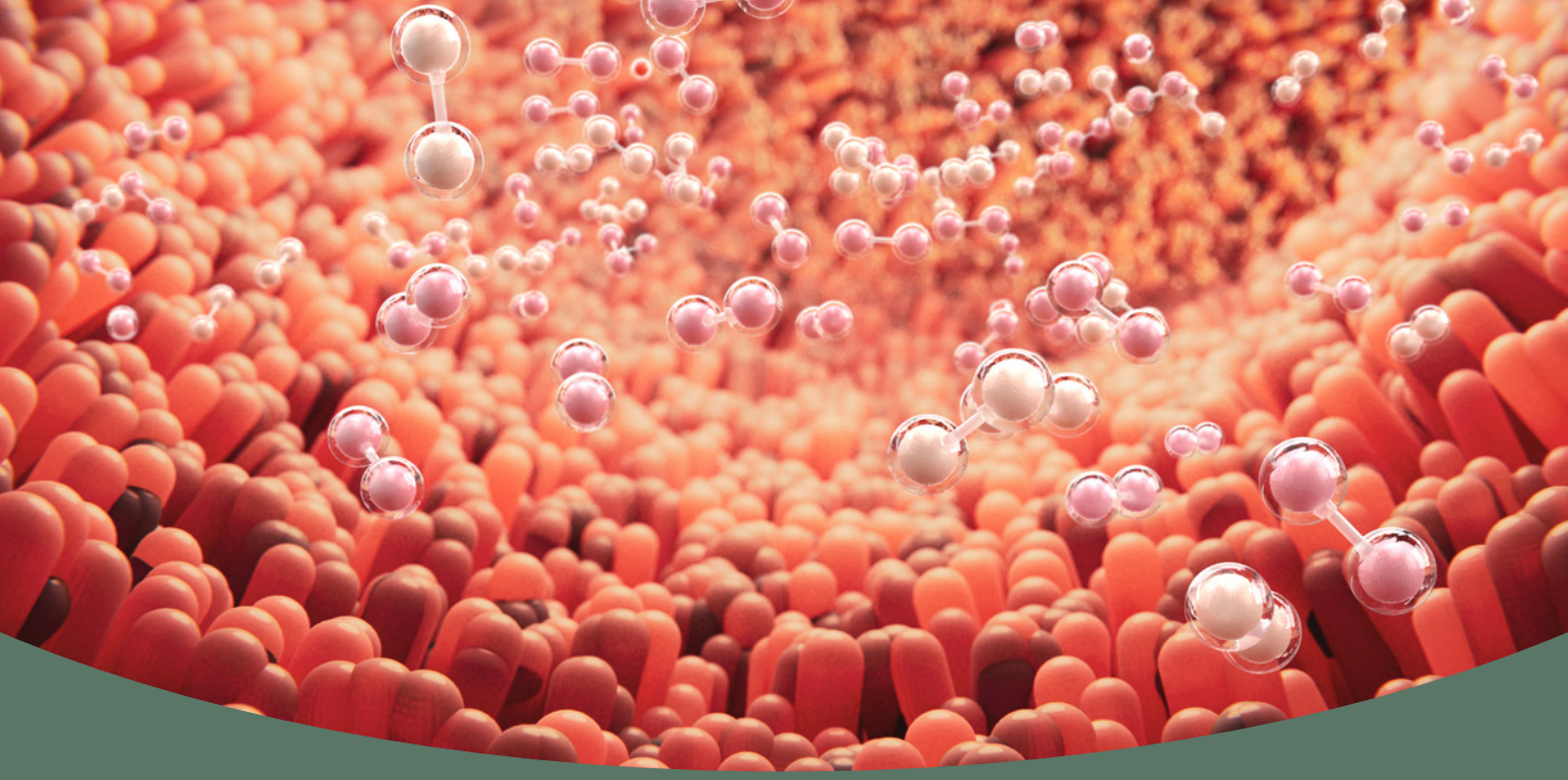
This general role of cathelicidins is conserved across mammals. In domestic cats, the single cathelicidin identified is the feCath which exhibits broad antimicrobial activity similar to human LL-37.

Although its specific functions in feline oral tissues have not been established, the antimicrobial properties suggest a role in oral innate immunity functions (Leonard, 2011; Van Harten, 2018).

Additionally, β-defensins expressed by the gingival epithelium form a protective antimicrobial barrier at the gingival margin. By limiting microbial colonisation and modulating local immune responses, these peptides help maintain oral microbial homeostasis and gingival tissue integrity (Fabbri and Berg, 2019).

A CAT WITH HEALTHY GINGIVAL TISSUES AND NO SIGNS OF PERIODONTAL DISEASE

A CAT WITH INFLAMMED GINGIVAL TISSUES AND SIGNS OF PERIODONTAL DISEASE



DIETARY PROTEIN INTAKE AND PERIODONTAL HEALING

The role of dietary protein intake, specifically peptides, in periodontal healing has been well-documented, especially in terms of its impact on the regeneration and repair of gingival tissues following periodontal treatments.

A study investigated the influence of dietary protein on the healing process after non-surgical periodontal therapy.

The research focused on the relationship between protein intake and tissue regeneration in patients who had periodontal disease.

The study found that patients who consumed at least 1 gram of protein per kilogram of body weight per day demonstrated significantly better healing outcomes compared to those with lower protein intake (Gholami and Berman, 2020).

Showing that adequate protein intake is essential for the synthesis of collagen and other structural components required for the repair and regeneration of periodontal tissues.

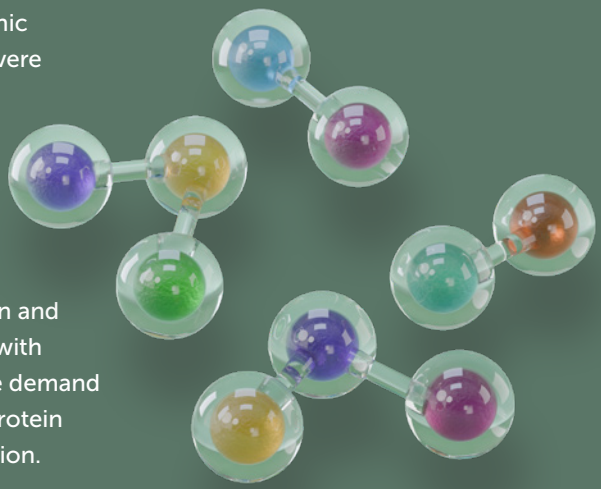
Hydrolysed proteins provide a readily available source of amino acids and bioactive peptides that support collagen synthesis, tissue repair, and wound healing.

Collectively, these findings highlight the important role of dietary peptides in maintaining gingival health and promoting periodontal healing.

These benefits may also be relevant in cats affected by feline chronic gingivostomatitis (FCGS), a severe immune-mediated disease characterised by persistent inflammation and impaired mucosal healing. (Soltero-Rivera et al., 2023).

Chronic immune dysregulation and tissue destruction associated with FCGS are likely to increase the demand for amino acids required for protein synthesis and tissue regeneration.

Although direct evidence in cats is currently limited, peptide-rich diets may help support mucosal repair and modulate inflammatory responses, serving as a complementary nutritional strategy alongside conventional treatments.



WHAT MAKES THE DENTAL CARE DIET SO UNIQUE?

The development and formulation of the Dental Care recipe has centred around the 'Power of Peptides', using the latest Freshtrusion® HDP technology.

Freshtrusion HDP (Highly Digestible Protein) is the unique process of cooking fresh meat and fish ingredients in the presence of a natural enzyme, which digests (hydrolyses) the protein into a mixture of peptides and free amino acids.

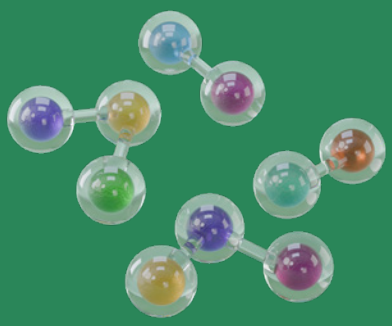
This increases the digestibility and bioavailability of the protein and improves palatability, through what we like to refer it as "The Goldilocks Principle":

HDP freshtrusion® HIGHLY DIGESTIBLE PROTEIN

THE GOLDILOCKS PRINCIPLE

Instinctively, it might be assumed that intact protein is best for a cat to digest, as it contains all the nutritional elements together in one structure. Similarly, individual amino acids, broken down into their smallest units, might be considered easier to absorb. However, research has shown that the optimal digestibility and absorption rates occur in small chain peptides (≤ 3 kDa). This concept is referred to as the 'Goldilocks Principle'.

INTACT PROTEIN

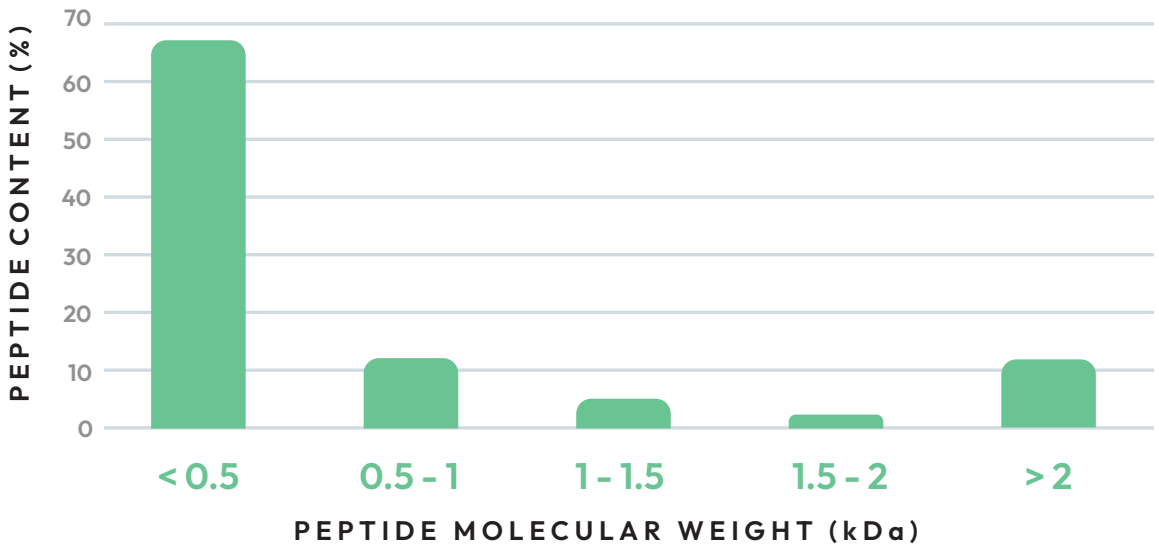


DI AND TRI-PEPTIDES

SINGULAR AMINO ACIDS

TOO BIG JUST RIGHT TOO LITTLE

DENTAL CARE: PEPTIDE CONTENT (%)



A minimum of 68% of the peptides in this recipe are < 0.5 kDa with just 11% of the peptides > 2 kDa

These results show the majority of peptides in the finished kibble fall into the < 0.5 kDa category, which includes the highly digestible and nutritionally beneficial dipeptides and tripeptides - achieving the Goldilocks Principle.

THE POWER OF THE PEPTIDES FOR DENTAL CARE

- ✓ **Increases the digestibility and bioavailability of the protein**
- ✓ **Improves the palatability of the recipe**
- ✓ **Ensures an ideal supply of amino acid building blocks required for the renewal, maintenance, and repair of gum cells**
- ✓ **Ensures an ideal supply of amino acid building blocks required for the synthesis of structural proteins such as collagen**
- ✓ **Ensures an ideal supply of amino acid building blocks required for the production of antimicrobial peptides that support healthy gums by reinforcing the oral barrier and reducing inflammation**

WHAT OTHER INGREDIENTS ARE BENEFICIAL IN MAINTAINING DENTAL HEALTH?

In addition to the inclusion of hydrolysed protein, the Dental Care diet includes a range of functional ingredients, including a unique dental blend called Plaque Defence. This is a multi-functional combination of five ingredients designed to promote optimal oral health.

It includes sodium hexametaphosphate, seaweed, cranberry, green tea extract, and peppermint.

These ingredients work synergistically to reduce plaque, inhibit bacterial growth, prevent tartar formation, and provide relief from inflammation.

Sodium Hexametaphosphate

Sodium hexametaphosphate is widely used in oral care products for its ability to prevent tooth staining and calculus formation.

In a clinical trial, products containing sodium hexametaphosphate significantly reduced extrinsic staining on teeth.

The mechanism involves the chelation of calcium, which prevents the formation of mineral deposits that contribute to staining and plaque (Reynolds, 2008).

A study evaluated the effect of dental treats containing sodium hexametaphosphate on the formation of dental plaque and calculus in cats.

The results showed that cats that consumed the treats had a **significant 24% reduction in calculus compared to the control group**, suggesting that Sodium hexametaphosphate can **help improve oral hygiene through a combination of mechanical and chemical effect** (Jarvis, B.et al, 2020).

Seaweed

Seaweed, especially *Ascophyllum nodosum*, has gained attention as a functional ingredient in pet diets due to several studies suggesting that its inclusion may help reduce plaque and tartar formation, as well as improve breath odour, positioning it as a promising supportive option for the prevention of oral health issues in dogs and cats (Gawor & Jank, 2023).

Seaweed contains fucoidans and alginates, mannitol and associated polyphenols, with antioxidant activity which are believed to exert a protective effect on teeth and gums by preventing microbial adhesion and reducing bacterial load (Obluchinskaya et al., 2022)

These compounds also exhibit anti-inflammatory properties, which may assist in reducing gingival inflammation. In the context of pet oral health, studies have demonstrated that incorporating seaweed into pet food or treats can reduce the formation of plaque and tartar, owing to its antibacterial activity (Doherty et al., 2009)

Cranberry

Cranberry, particularly its polyphenols, is known for its ability to prevent bacterial adhesion. Cranberry proanthocyanidins inhibit the adherence of Streptococcus mutans, a bacterium responsible for dental caries. Studies have shown that cranberry extracts can reduce the formation of dental plaque and biofilm, which are precursors to both cavities and periodontal disease (Jeong et al., 2008).

One study investigated cranberry's role in preventing dental caries in both humans and animals. It found that cranberry polyphenols could inhibit the growth of cariogenic bacteria, suggesting their potential use in preventing plaque and gum disease in cats as well (Bishop et al., 2013).

Green Tea Extract

Green tea extract, particularly its active compound epigallocatechin gallate (EGCG), possesses significant antimicrobial and anti-inflammatory properties. Green tea catechins have been shown to reduce oral bacteria, especially Streptococcus mutans, which is implicated in tooth decay.

EGCG also contributes to periodontal health by reducing collagenase activity, thereby helping to prevent the destruction of periodontal tissue (Al-Yami et al., 2013).

In the context of canine oral health, research indicates that green tea extract included in veterinary dental care products can reduce the bacterial load in the oral cavity and prevent the onset of periodontal disease.

Studies such as that by Weiss et al. (2012) support the inclusion of green tea extract in pet dental formulations for its oral health benefits.

Peppermint (Dried)

Dried peppermint contains active compounds that contribute to its recognised antimicrobial and anti-inflammatory effects.

Research into its use in oral health has shown that peppermint can reduce oral bacterial populations, alleviate gum inflammation, and promote fresh breath. Specifically, its antimicrobial properties have been shown to inhibit the growth of oral pathogens such as Streptococcus mutans, which are responsible for dental caries and periodontal disease (Rathore et al., 2016).

A study by Singh et al. (2018) demonstrated that dried peppermint leaf extract exhibited significant antibacterial activity against oral pathogens, suggesting it may assist in reducing microbial load, preventing plaque formation, and supporting overall oral hygiene.

In addition, dried peppermint is frequently used in natural remedies for its cooling and soothing properties, particularly for managing gingival discomfort and oral ulcers.

In veterinary applications, dried peppermint has been explored for its potential to promote oral health in pets, particularly in reducing halitosis (bad breath) and supporting gum health.

Although specific studies in cats are limited, broader research into plant-based ingredients suggests that peppermint may provide similar benefits in pets as in humans. Pet-safe dental chews containing peppermint leaf powder have been shown to reduce the bacterial causes of bad breath and gingivitis (Barton et al., 2013).

Due to its antimicrobial and anti-inflammatory actions, dried peppermint is considered a safe and beneficial ingredient for inclusion in feline oral care products.

Milk powder

Dental Care is also formulated with dried milk, which contains bioactive proteins such lactoferrin. Lactoferrin is a natural glycoprotein involved in iron metabolism and host defense that supports immune function through multiple mechanisms, including iron binding, immunomodulation, and antimicrobial activity (Meleti et al., 2025).

In the oral cavity, lactoferrin contributes to maintaining oral health by binding to bacterial cell surfaces, limiting the growth and colonization of oral pathogens associated with dental plaque formation while helping to preserve a balanced oral microbiota.

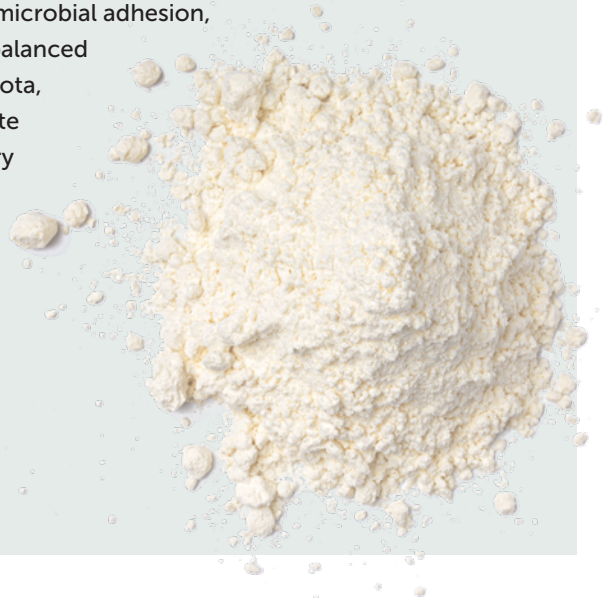
Furthermore, lactoferrin modulates local immune responses within the oral mucosa by interacting with immune cells, including B lymphocytes, promoting their activation and differentiation into plasma cells (Dong et al., 2024).

These antimicrobial and immunomodulatory properties may enhance mucosal defenses and help reduce chronic inflammatory responses associated with oral diseases in cats.

In addition to providing bioactive proteins, dried milk may support salivary function, which plays a critical role in maintaining oral homeostasis.

Saliva contains antimicrobial components, including lysozyme, myeloperoxidase, lactoperoxidase, lactoferrin, and other peptides, which contribute to microbial control by helping to flush the oral cavity and inhibit bacterial adhesion to gingival surfaces (Chandler M.2014).

Through the combined effects of bioactive milk-derived compounds and salivary defense mechanisms, these components may support oral homeostasis by helping to regulate microbial adhesion, maintain a balanced oral microbiota, and modulate inflammatory responses within feline oral tissues.



WHAT ARE THE RESULTS?

As part of the development of the Peptide+ Cat Dental Care recipe, a feeding study was conducted to evaluate the benefits of the food on cats' oral health. The feeding trial involved 22 healthy cats whose owners had either identified concerns regarding their cat's oral health or wished to evaluate whether the diet could improve their cat's oral health. In addition, the acceptance and palatability of the cat food was observed and evaluated.

The study was conducted by Dr Łukasz Kisielewski, DVM, at SABA Veterinary Office, Miastko, Poland.

The feeding trial was conducted over a 12-week period, following a transition period onto the test diet. Four key indicators of oral health were assessed: overall oral health, gum health, breath odour, and plaque/tartar levels. Each parameter was scored on a scale of 1–100, with higher scores indicating better oral health. A baseline assessment was performed before the trial commenced, followed by repeat assessments every four weeks throughout the study.

The results showed that the recipe **improved all areas of oral health assessed, including gum health, breath odour and plaque/tartar build-up. Additionally, palatability data indicated strong adaptation to the food.**

The verified complete records demonstrate a clear positive 12-week trend in owner-assessed oral health. The mean overall dental score increased from 53.2 to 89.8, with improvement evident by Week 4 and further gains at Weeks 8 and 12.

"The strongest commercial and veterinary value of this dataset is that it combines palatability and dental health perception."

86% of owners reported seeing an improvement in their cat's overall oral health.

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