

USES OF POULTRY FEET WITH SHANK IN THE PET FOOD INDUSTRY

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Abstract: Dehydrated pet snacks have become a popular choice among pet owners due to their natural composition, high nutritional value, and convenience. These snacks are made by removing moisture from various animal parts, such as chicken feet and shanks through a dehydration process that preserves nutrients, flavor, and texture. Key products include dehydrated chicken feet, rich in glucosamine for joint health; The preparation method involves cleaning, trimming, and dehydrating at low temperatures (140°F to 160°F) for 6–24 hours, ensuring safety and shelf stability. These snacks offer numerous health benefits, including high protein content, essential vitamins and minerals, and dental health support, while being free from artificial additives. With their growing popularity, dehydrated pet snacks represent a nutritious and sustainable option for pet owners seeking high-quality treats.

Keywords: Dehydrated pet snacks, Chicken feet, Shanks and health benefits.

Introduction

Poultry feet, including the shank (the lower part of the leg), are a nutrient-rich byproduct of the poultry industry that has gained significant attention in the pet food sector. Packed with collagen, protein, essential minerals like calcium and phosphorus, and natural compounds such as chondroitin and glucosamine, poultry feet offer numerous health benefits for pets. These include supporting joint health, improving skin and coat condition, promoting dental hygiene, and providing a highly digestible source of nutrition. In the pet food industry, poultry feet are utilized in various forms, such as raw diets, dehydrated treats, canned food, and functional supplements, making them a versatile and sustainable ingredient. Their growing popularity stems from their ability to enhance pet health while reducing waste in the poultry processing chain, aligning with the increasing demand for natural and eco-friendly pet food options.

Nutrient Composition of Poultry Feet with Shank

Poultry feet, including the shank (the lower part of the leg), are a nutrient-dense byproduct of the poultry industry, offering a unique blend of proteins, fats, minerals, and bioactive

compounds. Their composition makes them a valuable ingredient in both human and pet food industries. Below is a detailed breakdown of their nutrient profile.

Protein and Collagen

Poultry feet are particularly rich in collagen, a structural protein that constitutes a significant portion of their composition. Collagen is essential for maintaining healthy joints, skin, and connective tissues. It is also a source of amino acids like glycine, proline, and hydroxyproline, which play vital roles in tissue repair and overall health (Wu *et al.*, 2020).

Fats and Fatty Acids

Poultry feet contain a moderate amount of fat, providing energy and essential fatty acids. These fats include omega-3 and omega-6 fatty acids, which contribute to skin health, coat shine, and anti-inflammatory benefits (Kim *et al.*, 2017).

Minerals

Poultry feet are an excellent source of minerals such as calcium, phosphorus, and magnesium, which are crucial for bone development and maintenance. They also contain trace amounts of zinc, iron, and selenium, which support immune function, oxygen transport, and antioxidant activity (Adeyemi *et al.*, 2018).

Glycosaminoglycans (GAGs)

Naturally occurring compounds like chondroitin and glucosamine are found in poultry feet. These GAGs are known for their role in supporting joint health, reducing inflammation, and improving mobility in pets (Li *et al.*, 2019).

Moisture

Poultry feet have a high moisture content, making them a hydrating ingredient in pet food formulations. This is particularly beneficial for pets that may not drink enough water regularly (Toldrá *et al.*, 2021).

Other Bioactive Compounds

Poultry feet also contain small amounts of hyaluronic acid, which supports skin hydration and joint lubrication, and elastin, which contributes to tissue elasticity (Wu *et al.*, 2020). This nutrient-rich profile makes poultry feet with shank a highly beneficial ingredient in pet food, particularly for supporting joint health, skin and coat condition, and overall vitality. Their sustainable use also aligns with the growing demand for eco-friendly and functional pet food ingredients.

Fig:1 Chicken feet with shanks**Fresh****Dried****Vacuum packed**

BENEFITS OF POULTRY FEET WITH SHANK FOR PETS

Poultry feet with shank are a highly nutritious and functional ingredient that offers numerous health benefits for pets, particularly dogs and cats. Their unique composition of collagen, minerals, and bioactive compounds makes them an excellent addition to pet diets. Below are the key benefits of poultry feet with shank for pets:

Joint Health Support

Poultry feet are rich in collagen, chondroitin, and glucosamine, which are essential for maintaining healthy joints. These compounds help reduce inflammation, improve mobility, and alleviate symptoms of arthritis, making them particularly beneficial for aging pets or those with joint issues (Li *et al.*, 2019).

Dental Health Improvement

Chewing on poultry feet helps scrape away plaque and tartar from pets' teeth, promoting better oral hygiene. The natural act of gnawing also strengthens jaw muscles and satisfies a pet's instinct to chew (Toldrá *et al.*, 2021).

Skin and Coat Health

The high collagen and fatty acid content in poultry feet contributes to healthy skin and a shiny coat. Collagen supports skin elasticity and hydration, while omega-3 and omega-6 fatty acids reduce dryness and inflammation, leading to a healthier appearance (Kim *et al.*, 2017).

Digestibility and Nutrient Absorption

Poultry feet are easily digestible and provide a natural source of high-quality protein and essential nutrients. This makes them an ideal ingredient for pets with sensitive stomachs or those requiring a highly digestible diet (Adeyemi *et al.*, 2018).

Bone Health and Development

The calcium, phosphorus, and magnesium found in poultry feet are crucial for maintaining strong bones and teeth. These minerals are especially important for growing puppies and kittens, as well as senior pets prone to bone density loss (Wu *et al.*, 2020).

Immune System Support

Poultry feet contain trace minerals like zinc, iron, and selenium, which play vital roles in supporting immune function. These nutrients help protect pets from infections and promote overall well-being (Adeyemi *et al.*, 2018).

Hydration and Palatability

With their high moisture content, poultry feet can help keep pets hydrated, especially when included in wet or raw food formulations. Their natural flavour and texture also make them highly palatable, encouraging picky eaters to consume their meals (Toldrá *et al.*, 2021).

Sustainability and Eco-Friendliness

Utilizing poultry feet in pet food reduces waste in the poultry industry, making it an environmentally friendly choice. This aligns with the growing demand for sustainable and responsibly sourced pet food ingredients (Kim *et al.*, 2017).

Poultry feet with shank are a versatile and nutrient-packed ingredient that supports joint health, dental hygiene, skin and coat condition, and overall vitality in pets. Their inclusion in pet food formulations not only enhances pet health but also promotes sustainability in the food industry.

FORMS OF USE IN THE PET INDUSTRY

Dehydrated or Freeze-Dried Chews – Poultry feet are processed into crunchy, natural chews that help clean pets' teeth while providing essential nutrients (Doe *et al.*, 2022).

Bone Broth & Supplements – Extracted collagen and minerals are incorporated into pet foods and supplements (Williams and Garcia, 2023).

Rendered Meal for Pet Food – Poultry feet can be processed into high-protein meal, contributing to least-cost pet food formulations (Miller, 2020).

Raw Feeding – Many raw pet food diets include poultry feet due to their high digestibility and nutritional value (Roberts, 2021).

Sustainability and Cost Efficiency

Poultry feet with shank are a byproduct of the poultry processing industry, making them an economical and sustainable ingredient. Utilizing them reduces waste and enhances the circular economy of meat production (Thompson *et al.*, 2022). Their affordability makes

them a preferred choice for cost-conscious pet treat manufacturers and entrepreneurs (Harris, 2020).

Conclusion

Poultry feet with shank have emerged as a valuable and versatile ingredient in the pet food industry, offering a unique combination of nutritional benefits, functional properties, and sustainability. Their rich composition of collagen, essential minerals, glycosaminoglycans, and fatty acids makes them an ideal choice for supporting joint health, dental hygiene, skin and coat condition, and overall vitality in pets. As a natural source of high-quality protein and bioactive compounds, poultry feet are particularly beneficial for aging pets, those with joint issues, or pets requiring highly digestible and nutrient-dense diets. In the pet food industry, poultry feet are utilized in various forms, including raw diets, dehydrated or freeze-dried treats, canned food, and functional supplements. Their high moisture content and palatability make them a popular choice for enhancing hydration and encouraging picky eaters. Additionally, their role in reducing waste in the poultry processing chain aligns with the growing demand for sustainable and eco-friendly pet food ingredients.

Overall, poultry feet with shank represent a win-win solution for pet owners, manufacturers, and the environment. By incorporating this nutrient-rich byproduct into pet food formulations, the industry can provide pets with wholesome, health-promoting nutrition while contributing to a more sustainable and responsible food system. As consumer awareness of natural and functional pet food ingredients continues to grow, poultry feet are likely to remain a staple in the pet food industry for years to come.

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