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## Is High Preference Important for Pet Food Choices?



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### ABSTRACT

We investigated the preference for pet foods. The preference for pet food is considered important for properly nourishing pets and maintaining their health. However, it cannot be said that food is good because it has a good preference. Just as humans prefer to eat junk food separately from their staple food, it does not necessarily lead to good nutritional value and balance. As a premise, it is necessary that quality and safety are ensured, and that the owner can feed with confidence. In general, preference is considered to change depending on the taste and smell of the food, texture, and eating environment. Such properties should be derived from the raw material or manufacturing method of food, but in recent years, substances that improve food preferences, such as sprinkles, have been developed. This paper mainly focuses on pet foods for dogs and cats and introduces preference enhancers and factors that influence preference.

## INTRODUCTION

Commercially available pet food is considered to be beneficial in the sense that it is possible to easily provide a stable quality diet to pets such as pet dogs and cats. Pet food may be prepared at home, but pet owners mostly rely on commercially available pet food because it takes time and effort to collect and prepare many ingredients. Mass-produced pet foods are often manufactured overseas, and there are unclear points about their quality and safety<sup>1)</sup>. Good quality means that the ingested nutrients are sufficient for the pet. However, it is necessary that the nutrients that will be ingested are clearly stated and that the information for the owner to determine the amount of feed is properly provided. Raw materials should not be of poor quality<sup>2)</sup>. Safety means that it can be confirmed that non-nutrient components do not contain substances that cause poisoning or illness in pets. A sense of security about food can be elicited when the owner has some knowledge of the ingredients and can confirm their quality and safety. Domestic foods seem to be of higher quality and more reassuring, but there are only a few types of domestic foods distributed in Japan. In some cases, it is prepared at a completely privately owned store, but it is difficult to purchase unless there is a store nearby because there are only a few. Therefore, it will be laborious for owners to choose high-quality and safe food<sup>3)</sup>.

This study focused primarily on the preference of pet food for dogs and cats. No matter how good the quality and safety are, the pets-animals themselves actively consume the food. The owner can't force the pet to eat, and while reducing the intake can be achieved relatively easily by adjusting the amount of feed given to the pet, increasing it often requires other methods, such as considering the preference of the pet. If a pet owner wants to keep their pet healthy and have a good time with them, they will think about the food properly and decide on the type and amount so that their pet can get the right type and amount of nutrients. When feeding food to a pet, it is optimal for your pet to eat the entire amount that they are given<sup>1)</sup>. Therefore, we investigated and summarized the factors that influence the preference of pets based on previous studies.

### Types of pet food

Pet food can be mainly divided into staple foods and snacks when classified according to feeding opportunities<sup>4)</sup>. Pet food, as a staple food, is called a comprehensive nutritional food and is designed so that all the necessary nutrients can be obtained simply by feeding the pet food and

water. Snacks are pet foods that are intended to be supplied to pets in limited amounts for discipline and as exercise rewards. Therefore, it is not necessarily a nutrient supplement. Rather, eating too much leads to an overdose of nutrients. Table 1 shows the classification by water content, and Table 2 shows the classification by purpose<sup>4</sup>). Many owners feed their pets 2-3 meals a day with pet food, which is classified as a staple food that provides comprehensive nutrition. As a snack, processed products such as sweets are provided in small amounts several times a day. As a comprehensive nutritional food, dry foods that are sold in large volumes and are easy to maintain for a long time are often selected, especially for dogs, and foods such as semi-moist mixtures with a high water content are occasionally provided. In the case of cats, there are various methods to achieve good nutrition such as the continuous use of canned cat food with a high-water content according to the wishes of the owner. Snacks should not be given in large quantities, as shown in Table 2, but occasional snacks that are different from staple foods often have a very high intake potential. If the owner feeds the snack food as often and as much as the pet wants, the pet will become overnourished as a result of continual eating. It has long been empirically known that giving foods with different textures, even if they are only stapled foods, stimulate the five senses and makes it less likely that appetite will be lost<sup>5</sup>). It is thought that each pet has its favorite texture, taste, and smell in food<sup>5,6</sup>). Commercially available pet foods only suit the tastes of the majority of pets, and pet owners do not know if their pets are included in the majority. The intake of food is thought to change as a result of getting bored.

### **When the owner chooses food**

When pet owners choose food, they choose the food that suits the type and age of the pet. The owner usually does not have detailed information, such as nutrient content because the displayed values are not very clear. Usually, the amount of feed is determined according to the weight of the pet. It is possible to confirm whether commercially available food is manufactured domestically or overseas. Owners trust the products of well-known distributors and assume that quality and safety are ensured. Whether or not the purchased food suits the pet is often judged by the amount of food the pet consumes. If the pet does not consume the food, owners usually buy other flavors in the same series or other products to find one that the pet likes better. If pet owners find food that their pet eats well, they should buy it in large quantities and continue to feed their pet. Loss of appetite is often caused by boredom or illness. The owner unconsciously

confirms whether their pet's eating behavior and the amount of food eaten are the same as the previous day and uses it for monitoring health.

No matter how secure the owner feels about pet food, if the pet does not eat it, the owner will not be able to maintain the health of the pet. Owners must seek out pet foods that their pets prefer to eat. One of the aims for an owner is to choose food that the pet eats willingly and in a large amount when they are healthy. However, willingness to eat it does not mean that the food is good. Owners should recognize that high security and safety are completely different from high preference. In terms of human beings, cheap sweets and junk food are preferred regardless of nutrients and toxicity; therefore, they are completely unrelated factors. Depending on the type, it should be noted that even if the preference is high, a large amount may be harmful to health.

### **Factors that affect intake potential**

Based on previous research and the experience of the authors, we will introduce some of the factors that affect food preference. Factors that can affect preference include odor, taste, nutritional composition, water content, chewiness and texture, and eating environment<sup>7)</sup>. If one does not feel the taste is good when they first eat it, they tend not to eat it after that<sup>2)</sup>. In a previous study, researchers placed multiple feeding containers in front of their pets to see from which side they ate more food. The results of that study suggest that there may be a habit of eating more only on the right side<sup>8)</sup>. It is also known that the number of intake changes depending on the presence of a favorable odor. Therefore, it is generally said that freshly made foods, foods with high water content, and wet foods are more likely to be preferred. There is also empirical knowledge that even with the same dry food, appetite increases following heating and emission of odors. Just adding water will soften the food, and pets may eat more. The reason the same series of foods on the market have multiple types with different ingredients and tastes is not to change nutrients; it seems to be to change the tactile sensation (feeling of squeezing and texture on the tongue), smell, and taste so that pets will not get bored. Just as people sometimes want to eat out, changing the place of eating changes a pet's mood and further changes their preference. In the simplest case, changing the feeding container can make a difference. Differences in shape (for example, in the shape of bones and fish) and color (brown that imitates the color of meat, green and yellow that resemble the color of vegetables) of the grains of dry

food influence the owner's food choice. However, it has been found to have little effect on the preference of dogs and cats<sup>5</sup>). Dogs are colorblind, and cannot distinguish between colors, and do not know the original shape of the ingredients of the food (bones, vegetables, *etc.*) when eating it.

### **Seasoning to improve intake potential**

In recent years, researchers at the Kitasato University School of Veterinary Medicine have been researching to improve the taste and aroma of pet food, and patent applications for those that fall under the seasoning category have already been filed<sup>9</sup>). So far, the search for substances related to the taste and aroma preferences of dogs and cats has been promoted. Previous research has shown that a peptide-based pet food material (pet food preference improver) with excellent preference and health functionality is effective. The main ingredient is protease-treated poultry or livestock liver<sup>10,11</sup>). The obtained powdery substance is similarly added to pet food to sprinkles to enhance the odor (main components: 2-phenyl-ethanol,  $\gamma$ -nonalactone, furaneol, *etc.*) and thus improve preference.

Before this, various food seasoning preparations were containing L-glutamic acid, which enhances the taste of seafood-based seasonings, and succinic acid, glutamic acid, glycine, and fumaric acid, which enhance the taste of meat and delicacies<sup>10</sup>). This substance is novel in that it attempts to create a new odor that pets like, rather than the conventional idea of enhancing taste. In addition, it is a dry powder that can be added to many foods, and the advantage is that the nutritional value does not have to be considered as carefully. As a preference test for dogs, five dogs were tested by changing the position of the metal plate. As a result of testing feeding preference between additive-free and 5% additive, or additive-free and 10% additive for two days, the preference was better with the additive. It was reported that the proportion of food intake was significantly higher with the 10% additive than with the additive-free product, but lower with the 5% additive product than with the additive-free product<sup>10</sup>).

From this result, it appears that a certain effect is observed in the improvement of preference, but there are some points to be noted. First, this has been examined in only a few dogs, as can be seen from the details of the experiment, and it remains questionable whether this is the result for all dogs. Of course, it is not clear from this result whether the same thing can be said for cats.

Second, the above experiment was conducted on the same animal for two days. There is a high possibility that the taste is not yet tired, and whether the effect of increasing preference will continue even if it is used for a long period remains unknown. From the manufacturing process, it seems that it is not toxic, and it has the advantage of being used without worrying about calories as compared to snacks. If the food you want to give your pet has good nutrient content and balance but is less preferable and you only want to improve that, it may be worth trying.

## CONCLUSION

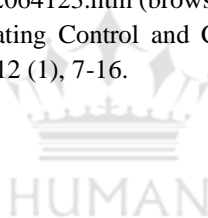
The high preference for pet food is a necessary factor for the dietary behavior of pets and them to properly obtain the necessary nutrients. However, owners must understand that high preference does not indicate that the food is of high quality and safety. Moreover, it cannot be said that it is good if the preference is high. Of course, the persistence of high preference makes it easier for pets to complete their diet and obtain sufficient nutrients, but this does not mean that they should consume as much food as they want. Pet owners should also be aware that if they give too much and their pet eats it all, their pet will become obese. Especially in the case of dogs, sometimes they do not feel full even after over eating<sup>12)</sup>, and this depends on the breed of dog<sup>13)</sup>. Just as parents control the number of snacks their children consume and encourage them to eat three staple meals, the owner needs to manage the nutrition of the pet properly and control the amount consumed even if the pet wants a lot of food.

Of course, if the preference is extremely low, the absorption of nutrients will be insufficient, and survival will be difficult unless measures are taken to improve intake. The cause may be the nature of the food, or the appetite may be reduced due to illness. Ultimately, owners must rely on veterinarians and veterinary nurses because the decision is difficult for owners without specialized knowledge. As in the content of this paper, the appetite may be restored by changing the food properties, so it is necessary to try such changes first.

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**Table 1 Classification by the difference in water content of pet food**

Classification*	Product type (Displays, containers)	Overview	Moisture content	Hardness
Dry	Dry	<p>Pet food with a moisture content of about 10% or less.</p> <p>Most of them are solid and heat-foamed.</p> <p>If the water content is 13% or more, mold will grow, so it is necessary to keep it at 12% or less, and in consideration of safety, most of them have a water content of 10% or less.</p> <p>Since it can be stored for a long time, it is often sold in large-capacity packs.</p>	<p>Many</p> <p>↑</p>	<p>Hard</p> <p>↑</p>
Soft dry	Soft dry	<p>It is a pet food with a moisture content of about 25-35% and is heat-foamed.</p> <p>Use a moisture regulator to keep it wet.</p> <p>Although it is in a bag, it is often packaged in small quantities to maintain quality, or it can be resealed after opening.</p>	<p>↓</p>	<p>↓</p>
Semi-dry	Semi-dry	<p>Food with a moisture content of 25-35%, manufactured by an extruder, etc., and not foamed. Use a moisture regulator to keep it wet.</p> <p>Although it is in a bag, it is often packaged in small quantities to maintain quality, or it can be resealed</p>		



		after opening.		
Wet	Wet, canned	Food that has a moisture content of about 75% and is filled in cans after undergoing a sterilization process to maintain quality. After opening, it cannot be sealed again and cannot be stored for a long time.		
	Wet, others	Food that has a moisture content of about 75% and is filled in aluminum trays and retort pouches after undergoing a sterilization process to maintain quality. After opening, it cannot be sealed again and cannot be stored for a long time.	Few	Soft

\* It seems to be a classification method by the Japan Pet Food Association only in Japan.

Based on the contents of reference 4).

**Table 2 Classification according to the purpose of pet food**

Classification	Overview
Comprehensive nutritional diet	<p>A nutritionally balanced product of pet food that is intended to be fed to dogs or cats as a major daily diet and that can maintain health at the specified growth stage with the pet food and water alone. Staple food as described in Table 1.</p> <p>Usually, in addition to the notation of comprehensive nutritional diet, the growth stage of the applicable dog or cat (pregnancy / lactation, growth, maintenance, all stages) is also described</p>
Snack	<p>Products intended to be given in limited quantities as snacks or rewards (kneaded products, material-based products, gums, dental products, confectionery, <i>etc.</i>).</p> <p>Generally, it is written as a snack or similar.</p> <p>Pet snacks (the maximum amount given is recommended to be within 20% of the daily energy requirement in principle).</p>
Therapeutic diet	<p>Intended to be used for dietary management under the guidance of a veterinarian.</p> <p>A food that is used to assist treatment by adjusting the amount and ratio of nutritional components in the food.</p> <p>It is not commercially available and may be prepared by veterinarians and veterinary nurses.</p>
Other purpose foods	<p>Those that do not fall under any of the above and meet the purpose of specific nutritional adjustment, calorie supplementation, or preference enhancement.</p> <p>There are the following classifications: side dishes (general diet (given with comprehensive nutritional diet), sprinkle, <i>etc.</i>); dietary supplement (calorie supplements, animal nutritional supplements (animal supplements), <i>etc.</i>).</p>

Based on the contents of reference 4).