

# Mineral Nutrition Needs of Domestic Cats

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**Abstract:** Pet nutrition is a science to explore the whole process of absorption and utilization inside, and to analyze the relationship between life activities and nutrients. With the continuous improvement of the national economy and living standards in recent years, the pet industry has entered a period of rapid growth in areas with high GNP, and pet nutrition has emerged. Pets play an important role in bringing people joy. They accompany people's life, relieve pressure and improve the sense of responsibility of owners. In the context of most families owning pets, people pay more and more attention to the welfare and health and nutritional needs of pets. Mineral is an essential inorganic nutrient in the activities of life organism. Although it needs a small amount, it plays a critical role in the physiological regulation of pet diet. The lack of minerals will cause the pet growth to be blocked, metabolism disorder, internal environment disorder, disease and other symptoms. Moreover, excessive mineral deficiency is a common clinical symptom. However, the deficiency will be gradually relieved until it disappears as long as the corresponding elements are supplied. The deficiency is solvable and easy to treat, but it occurs frequently. Otherwise, it will cause serious pet health problems. Calcium, iron, sulfur, magnesium, sodium, potassium, zinc and other elements are known mineral elements for domestic cats. Although they are less in vivo, they are necessary for growth and development in domestic cats. The symptoms of mineral deficiency in domestic cats and some solutions were discussed in this article.

**Keywords:** Pet; Domestic Cat; Mineral; Pet Nutrition

## 1. Content

The investigation found that the domestic cats will have some abnormal behavior in the case of lack of mineral elements, such as stick face to the soil, eat paper, eat cat litter, lick the wall, in the non-hair changing period there are a lot of hair off, nose whitening and other phenomena, which are sufficient to prove that the domestic cat lack of mineral elements<sup>[1]</sup>.

## 2. The mineral elements

### 2.1 Calcium

At birth, the calcium content of kittens is close to 6

grams per kilogram, while that of adult cats is higher, about 15 grams per kilogram. This value is very high for the mineral elements in the body, so calcium is also known as "macromineral", which shows the importance of calcium in vertebrates. Lacking of calcium will cause a variety of diseases in cats. When the calcium in cats is insufficient for a long time, serious symptoms will appear, such as arrhythmia, lethargy, osteoporosis and so on. The problem of diet will become more and more serious, and anorexia is a common phenomenon. In serious cases, domestic cats will like to eat strange things different from daily cat food. There will be bone swelling even lesions, cramps and other symptoms. Studies have

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shown that when newborn kittens calcium deficiency which thins the bones, especially in the lumbar spine, pelvis followed. It is irreversible for their future growth. When the cat is short of calcium, it is usually bound with phosphorus deficiency, which seriously affects the growth and development of the cat. Nowadays, there are many supplements for calcium in the market. It can be seen that the research of calcium mineral elements is in a high-speed development stage, and it can also be seen that the harm of calcium deficiency, which leads to the pursuit of efficient calcium supplements<sup>[2]</sup>.

## 2.2 Magnesium

The growth and development of domestic cats will be hindered when the magnesium content is insufficient. The body size of domestic cats is obviously smaller than the same age and the same breed. and they will also have the symptoms of anorexia. The results show that magnesium deficiency can affect the accumulation of calcium in animal soft tissues and increase the calcium content. Excessive magnesium content in domestic cats generally seldom occurs, because domestic cats can synthesize of magnesium ammonium phosphate in the body, and then excrete excessive magnesium through urine in this form. However, it should also be noted that excessive magnesium ammonium phosphate crystal deposition will cause urinary obstruction in domestic cats, resulting in urinary bladder accumulation, and even serious lesions. Therefore, attention should be paid to the balance of calcium, phosphorus and magnesium when feeding cat food.

## 2.3 Sulphur

Sulfur is involved in the synthesis of pet keratin, which is necessary to beautify pet's body surface. Sulfur is mainly involved in the composition of protein in body. Generally speaking, the lack of sulfur in domestic cats can also prove that the protein synthesis in domestic cats is reduced or the protein intake is too low. Lack of sulfur will lead to emaciation of the body, loss of collagen, inhibition of the growth of hoof, claw, hair and other tissues, which will lead to illness and poor body surface. It can also make the domestic cat easily form urinary calculi, the homeostasis of the body is difficult to maintain, and bacteria can grow. The research shows that calcium sulfate is suitable for most cat food when it is added into

pet food as feed additive. The use of calcium sulfate in cat food can supplement calcium and sulfur for domestic cats, maintain the steady state of urinary tract, beautify the body surface, soften hair and remove miscellaneous hair. Calcium sulfate has played a good role in the growth and disease control of domestic cats, and has a wide range of applications. Calcium sulfate can be used as an additive for all kinds of domestic cats of all ages. By controlling the content of sulfur element, the domestic cat can show a perfect posture, have smooth and shiny hair, meet the visual needs and sense of achievement of the owners, and also benefit the gastrointestinal health of the domestic cat<sup>[3,4]</sup>.

## 2.4 Sodium

The lack of sodium will affect the heart and kidney function of domestic cats. In serious cases, dehydration will occur and lead to heart failure and muscle weakness. The sodium ions of domestic cats are mainly absorbed in drinking water. If domestic cats eat low-quality water for a long time, it will cause diarrhea, and even show extreme thirst after drinking water. Continuous low-dose sodium intake can also cause muscle convulsions, which can lead to death in severe cases. Generally, 1% - 2% sodium chloride is also used to prevent and treat diarrhea and vomiting in cats. Veterinary studies have also indicated that the prevention of urinary calculi by adding appropriate amount of sodium chloride in cat food, stimulating domestic cats to drink more water and preventing intestinal accumulation.

## 2.5 Potassium

Although potassium does not participate in the structural composition of animal body, it plays an important role in the physiological aspects of animal body. Recent studies show that potassium has anti infection effect in animal body. In the absence of potassium, the osmotic pressure and ions in domestic cats are difficult to balance, and many enzymes are difficult to activate due to the lack of potassium element, which will affect the metabolism and growth of domestic cats. Problems will occur in neuromuscular stress performance and myocardial contraction. Domestic cats will suffer from arrhythmia, muscle weakness and slow response. However, it is not allowed to take too much potassium. Excessive potassium will affect the absorption of other mineral

elements, destroy the ion balance in the body, and cause spasm frequently.

## 2.6 Zinc

In the process of breeding, it is difficult for pet owners to detect the symptoms of zinc deficiency in cats. Serious diseases caused by zinc deficiency are usually sudden. Studies have shown that zinc deficiency can lead to tasteless food, insensible smell, decreased perception of smell or taste, inhibit the immune function of domestic cats, and make wounds hard to heal. Zinc deficiency has a great influence on the skin of domestic cats, and often leads to skin lesions, such as excessive phosphorus dust on the skin, thinning hair on the upper layer of the skin, and skin wound healing difficulties to ulcers.

Zinc plays a great role in clinical medicine. Zinc can be used as an adjuvant treatment for cats with copper accumulation in the liver. Domestic cats can be supplemented with zinc when eating. Because the metallothionein in intestinal epithelial cells is easy to combine with zinc, the expression of protein is improved, and the metallothionein is easier to combine with copper, which can promote the combination of copper in food and intestinal epithelial cells. With the shedding of intestinal epithelial cells, the copper element is discharged out of the body through feces to achieve the therapeutic effect. As a pet owner, in addition to the daily cat food, you can supplement some food that has rich zinc for domestic cats at intervals, such as lean meat, pig liver, etc., to achieve the preventive effect<sup>[5]</sup>.

## 2.7 Iron

As a component of hemoglobin, myoglobin and many enzymes, iron plays an important role in oxygen transport, exchange and tissue respiration. In case of iron deficiency, domestic cats are prone to anemia, drowsiness and listlessness. But excessive iron intake can cause damage to the internal organs and skin. Pet owners should pay attention to the content of iron when choosing daily food. If they feed food with high concentration of iron for a long time, iron will deposit in the body of domestic cats, causing oxidative damage.

## 3. Discussion

Pet nutrition is different from traditional animal nutrition because it does not serve economic animals. The

purpose of traditional animal nutrition is to provide high-quality meat, milk, eggs, skin and hair products, improve the health of human diet, and optimize the living standards of human beings. Its purpose is to obtain more economic benefits. Therefore, more attention should be paid to the economy of these livestock feeds, such as the use of nutritious, cheap and digestible local raw materials. As a specific animal, pets are regarded as family members by most human beings, which is the comfort of people's partners and feelings. In the process of raising, people pay more attention to the health and longevity of pets. As an important part of pet nutrition, pet's diet structure is becoming more and more important. Mineral elements, as essential nutrients for pets, play an important role in pet health. Mineral element is an important component of enzyme system, which plays an important role in the growth and development of pets. Nowadays, the pet industry in China is still in initial stage. Although there is a general trend of development, the knowledge of pet nutrition has not been popularized, especially mineral nutrition. But in the future, with the continuous development of China's economic and technological level, in-depth research on pet nutrition will continue, and the mechanism of mineral elements in absorption and utilization will continue to be analyzed. The application of mineral elements in the stage of pet medical treatment has unlimited possibilities. Pets are increasing but knowledge is not widespread, and the incidence rate of pet liver diseases is also increasing due to the problem of diet structure. The pet nutrition management plays an important role in the prevention of diseases. In order to solve the problem of pet food structure, we can start with the commercialized pet food. The commercialized pet food is now the first choice of pet owners, which not only saves the time cost of pet owners, but also provides nutrition in all aspects. Therefore, it is urgent to solve the problem of developing healthy and applicable pet food. Pet food should be made of digestible raw materials, high energy should be provided by fat and carbohydrate, and the mineral level should be well matched. In line with the concept of green environmental protection and efficient utilization of pet food, the proportion of pet diet structure should be continuously improved, new type and high-function food additives should be developed, and pet owners should be given convenience.

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