# Pet Nutrition Guide

dog & cat

Prince®
CORPORATION

# Common Questions

**Some of the most common questions asked at retail are:**

- What Should I Feed my Pet?
- What is the Best Food on the Market?
- Is This Alright for my Pet?

On average, consumers make uneducated purchases. They are looking at you, the retailer, for guidance. Consumers believe you have the education and expertise to help them make the best purchase for their pet. You have the ability to persuade and change people's perspective.

Your decision to read this handbook reflects your desire and willingness to educate yourself, and your customers, by learning about pet nutrition.

Your education helps you give your customers the information they will need to make an informed decision on what they should feed their pet.

If you are not able to answer questions correctly and simply, your customers may look elsewhere for information, and often this information is misinterpreted. Customers are perhaps using the Internet, television, or maybe magazines, or worse - your competition.

***A typical pet food store has more shelf space devoted to pet food than any other single product.***

- There are over 10,000 brands of pet food on the market today.
- There are over 2,000 manufacturers.
- Most foods are marketed on
  - Price
  - Lifestyle Concept
  - Palatibility

# Nutritional Content

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***High quality foods provide pets the best nutrition.***

**PROTEIN:**

Protein is an essential component of all body tissues. It is necessary for the growth and maintenance of almost all tissues of the body, including muscle, hair, bone, and organs. Proteins not used for tissue growth and maintenance can be used as energy. The amount of protein required is dependent on species, age, and protein quality. The higher the protein quality the less is required. Cats always use a certain amount of protein for energy, hence the need for a higher protein diet. In most animals liver enzymes will adapt to the amount of protein consumed. This allows animal to excrete excess nitrogen when fed a "high" protein diet, and to conserve nitrogen when fed a "lower" protein diet. Cats are not flexible in this area, as they do not have this ability, and must be fed food specifically for cats.

***Protein deficiency symptoms in a pet may include:***

- Depressed Appetite
- Poor Growth
- Loss of Weight
- Rough and Dull Coat
- Lower Reproductive Performance
- Reduced Milk Production

**CARBOHYDRATES:**

Carbohydrates are a chief source of energy. Carbohydrates are the primary fuel for muscles and brain. Furthermore, they aid in digestion, and provide immediate energy. They also help regulate protein and assist in breaking down fats within the liver. Excess carbohydrates are stored as body fat.

**FATS AND OILS:**

Fats in your pet's diet are concentrated forms of energy. Fats contain two and one fourth ( 9 k/cals) as much energy (per unit of weight), as an equivalent weight of protein or carbohydrates. Fats enhance palatability of a pets diet and influence texture of the kibble, carry fat soluble vitamins A,D, E,K and supply essential fatty acids (EFAs).

Fats and essential fatty acids are components of hair and skin. Where deficiency occurs, the coat becomes dry and coarse and in turn the skin becomes dry, thickened, and flaky. This can lead to itching or scratching.

Excesses of fat are stored in the body, and as well, acute ingestion of high levels of fat (i.e. table scraps) may cause a bout of acute pancreatitis.

**FIBER:**

Fiber is an important nutrient in a pet's diet. It helps to maintain a healthy digestive system by regulating bowel function. Fiber is mostly found in tissues. Although dietary fiber in pet foods are relatively non-digestive nutrients, they do contribute to fecal consistency and firmer stool formation.

# Nutritional Content

## MOISTURE:

Water is one of the most important nutrients a pet needs, as the body has a limited capacity to store water. A pet will survive for weeks without food, but without water will survive for only a few days.

***Water helps:***

- Regulate Body Temperature
- Cushions Joints and Internal Organs
- Digest Food
- Eliminate Waste

**This is why a fresh, clean bowl of water is necessary at all times.**

## MINERALS:

Minerals are essential for bone and tissue development and proper functioning of the body. Too much or too little of certain types of minerals can have a harmful effect on pets. It is crucial to choose a complete and balanced pet food that has been formulated by a certified nutritionist and produced by a competent manufacturer.

The measurement of total mineral content of any pet food is described in general terms as its ash content. Ash is determined by burning a particular pet food at 600 degrees for two hours - the remaining noncombustible residue is known as ash. Ash contains calcium, phosphorus, sodium chloride, potassium, and other minerals, which are essential nutrients. A diet low in ash may not supply all the minerals a pet needs which could cause a mineral deficiency and subsequent health problems.

***Minerals to Look For:***

- Cobalt
- Iodine
- Magnesium
- Potassium
- Zinc
- Nickel
- Molybdenum
- Silicon
- Fluorine
- Copper
- Iron
- Manganese
- Sodium & Chloride
- Selenium
- Sulphur
- Aluminum
- Chromium

## VITAMINS:

Vitamins assist in the body's ability to resist disease and are an essential part of the enzyme system. They help convert mineral elements into structural components of bones and teeth. Vitamins are known for their important role in red blood cell formation, reproduction, and assistance in maintaining appetite and a healthy skin and coat.

There are two types of vitamins, fat-soluble and water-soluble. The fat-soluble vitamins include A,D,E, and K, and are stored in the body. Over supplementing with these vitamins can have a toxic effect on pets. Water-soluble Vitamins include B-Complex vitamins and vitamin C.

***Fat-Soluble Vitamins***

- Vitamin A
- Vitamin D
- Vitamin E
- Vitamin K

***Water-Soluble Vitamins***

- Vitamin B12
- Niacin & Panthothenic
- Thiamine B1
- Biotin
- Riboflavin B2
- Choline
- Pyridoxine B6
- Vitamin C

## ACCEPTABILITY:

Is a measure of whether or not the animal will consume enough to meet their caloric requirements. This is important to consider with foods that are less digestible, and less utilizable. Will the animal be able to eat enough, before the stomach gets filled with non-digestible nutrients?

Palatability factors include smell, texture, shape, temperature. Breaking this down into categories will helps us look at them individually.

## SMELL:

Most animals have a keen sense of smell, and dogs and cats are no exception. You have probably noticed that before they eat their food, they smell it. Although the odor of a food is important, it is quite possible to take the least digestible or nutritious food on the market, make it smell lovely (to a dog or cat) by spraying digest or oil on the outside of the food, and presto the animal LOVES it. However this IS NOT an indicator of the quality of the food.

## TEXTURE AND SHAPE:

This is the category where cats stand up and take notice. It is possible to change the shape or texture of a food normally eaten by a cat, and the cat will refuse to eat it. Often times manufacturers will make a food a particular shape because they know that cats are creatures of habit, and may become "addicted" to the shape.

## TEMPERATURE:

Most dogs and cats do not like refrigerated food, as may be the case with that unused opened tin in the refrigerator, or raw diets, but prefer it at room temperature. To increase palatability try popping it into the microwave for a few seconds. DO NOT overheat, as that will decrease palatability.

## ALLERGIES:

Dogs are only allergic or intolerant to the protein or carbohydrates source in any food choice, and previous exposure is necessary for any allergy to occur. Cats are not as often allergic, but do suffer from food intolerances. Sometimes intolerances will exhibit as ear infections or paw licking, and an outright allergy will exhibit as pruritis (itching), vomiting, diarrhea, and hot spots, among other symptoms.

## CARBOHYDRATES:

Soluble carbohydrates are the starchy portion of a plant that can be easily digested by a dog or cat. Some digestible carbohydrates include cereal grains such as barley, oats, corn, and wheat, as well as rice and potatoes. Raw potatoes and bananas are included as non-digestible. Carbohydrates are an important part of all dry pet foods, as they provide energy, and are easily converted to gluclose. As carbohydrates pass through the digestive tract, enzymes break them down into usable forms.

## FATS AND OILS:

Omega 3 and 6, more commonly known as essential fatty acids (EFAs). Omega 3 and Omega 6 are abundant in leafy plants consumed by free-range animals. Grazing and wild animal fats contain a higher amount of omega 3 than non free roaming animals. This is the reason we need to supplement our companion pets diet. Essential fatty acids are an important part of all mammals diet. The best dietary source of Omega 3 is found in fish, and fish oil. The highest amount is found in flaxseed. Omega 6 is found in sunflower and safflower oil, as well other fat and oil sources.

## FIBER:

There are two types of major dietary fiber, insoluble and soluble. Soluble fiber dissolves in water, whereas insoluble remains intact. Soluble fiber also feeds the “good bacteria”, which lives in the digestive tract, promoting intestinal health. Because dietary fiber is composed largely of structural components of the cell walls of the plants, the major sources of fiber are whole grains, legumes, vegetables, fruits and nuts. Animal products are not a source of dietary fiber. The distribution of specific types of fiber varies, even within food groups grains.

## MINERALS AND THE CHELATION PROCESS:

What is a chelated mineral? In very simple terms, a chelated mineral is a mineral such as copper, zinc, manganese, cobalt or iron ( there are others) that is bonded to “small proteins”, peptides or amino acids. The process of chelating improves the absorption of the mineral from the digestive tract.

# Measuring Energy

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***Animals are not capable of extracting all of the total energy of a food.***

## THERE ARE FOUR WAYS TO MEASURE THE ENERGY CONTENT:

1. **The Gross Energy (G.E.)** content of a food is determined by completely burning that food to its ultimate oxidation products: carbon dioxide, water and other gases. The heat given off is considered to be the G.E. of that food.
2. **The Digestible Energy (D.E.)** Content: of a food is the amount of energy in the food which the animal is able to absorb. It is determined by animal feeding trials in which the G.E. in the food an animal eats is measured along the with G.E. lost in the animal's feces. The difference between these two represents the amount of energy the animal digested and absorbed. Nutrients from animal sources are generally considered more digestible than plant sources.
3. **The Metabolizable Energy (M.E.)** content of a food represents the amount of energy in the food which the animal actually utilizes. This is determined by an animal feeding trial in which the G.E. in the food the animal eats, along with the G.E. in the animal's feces and urine, are measured. The difference between G.E. in the food consumed and the G.E. excreted in the feces and urine combined represents the amount of energy available for the animal's use. As well this may be determined by using a calculation. When the energy content of a pet food is stated on the packaging, it may be termed M.E.
   Animals, as a general rule, eat to satisfy their need for energy. What this means, is that they will eat to meet their caloric requirements. Often times however, this rule does not hold true. Due to increased palatability, sedentary lifestyle, and genetics, animals may consume more food than required. In this case is it important to portion control.
   As well there may also be situations where a food may not be energy dense enough, and a dog may not be able to consume enough food to meet its energy requirements. As an example, a pregnant bitch who needs 2 to 4 times her normal energy requirements, or an active police dog.
4. **Biological Value (BV)** of a protein source. This is a term more often used by nutritionists than cat or dog feeders. If you really need to know how a formula is put together, this is the way. Biological Value (BV) is one of the most misunderstood by pet owners, and it needn't be. It is a term used to determine the amount of amino acid present in any particular nutrient. The quality of a nutrient is based on its BV. It is the relationship of the nutrient digested, absorbed and retained, to the amount digested. The BV of protein is not its ability to supply energy, but the degree of its ability to furnish amino acids.

# Antioxidants & Supplements

**ANTIOXIDANTS:** Synthetic or natural substances added to products to prevent or delay their deterioration by action of oxygen in air. In biochemistry and medicine, antioxidants are enzymes or other organic substances, such as vitamin e or beta-carotene, that are capable of counteracting the damaging effects of oxidization (the process where fatty acids are degraded) in animal tissues.

Free radicals are atoms or groups of atoms with an odd (unpaired) number of electrons and can be formed when oxygen interacts with certain molecules. Once formed these highly reactive radicals can start a chain reaction, like dominoes. Their chief danger comes from the damage they can do when they react with important cellular components such as DNA, or the cell membrane. Cells may function poorly or die if this occurs. To prevent free radical damage the body has a defense system of antioxidants.

***In simple terms antioxidants absorb free radicals and react chemically with them to form harmless compounds.***

**Cranberries -** may be tiny and tart, but their health benefits appear to be huge and sweet. Cranberrries are said to possess antibacterial properties that aid in the prevention of urinary tract infections (UTIs). Cranberries may also act as natural "probiotics" but enabling the good bacteria in the GI tract to thrive, while killing off the bad bacteria that promote infections and foodborne illnesses.

**Blueberries -** continue to generate increased interest for their potential health giving properties. According to research currently underway at the USDA Human Nutrition Research Center on Aging at Tufts University, blueberries top the list of some 40 fruits, juices, and vegetable in their antioxidant activity.

**Garlic -** is one of the world's oldest healing herbs, and as such has been used for centuries for everything from headaches, colds and tumors. The benefits lie in its antibiotic, antioxidant and heart-protective qualities, Garlic is also said to fight infection, lower cholesterol, blood clots and facilitate blood flow.

**Ginger -** A scientific research study shows that there have been some exciting results with respect to the medicinal properties of ginger. These include the ability to control nausea and vomiting, prevention of coronary artery disease, healing and prevention of both arthritic conditions and stomach ulcers. In addition, ginger has been shown to be effective against tumor growth, rheumatism, migraine and is active as an antioxidant in the body.

## *Supplements*

### GLUCOSAMINE HYDROCHLORIDE:

One of the most effective supplements for osteoarthritis is a compound called glucosamine. Glucosamine is an amino sugar produced from the shells of chitin (shellfish) and is a key component of cartilage. Glucosamine works to stimulate joint function and repair. It has been proven effective in numerous scientific trials for easing osteoarthritis pain, aiding in the rehabilitation of cartilage, renewing synovial fluid, and repairing joints that have been damaged from osteoarthritis.

Each animal produces a certain amount of glucosamine within their bodies. When animals grow older, their bodies lose the capacity to make enough glucosamine. Having ample glucosamine in your dogs body is essential to producing the nutrients needed to stimulate the production of synovial fluid, the fluid which lubricates your cartilage and keeps your joints healthy. Without enough glucosamine, the cartilage then hardens and forms bone spurs, deformed joints, and limited joint movement. This is how the debilitating disease of osteoarthritis develops.

## CHONDROITIN SULFATE:

Chondroitin Sulfate is a supplement that has gained popularity for dog owners. For arthritis, this natural form is made from cow and shark cartilage; supplement manufacturers can also make a synthetic form of this protein in laboratories.

The body uses chondroitin to make new bone, tendons, and cartilage. Cartilage is the tough, white, fibrous portion of the joint that normally allows pain-free movement. Chondroitin is believed to help draw fluid into the cartilage, making it spongy and flexible. It's also touted to help vital nutrients enter the cartilage, which help keep it healthy.

## MSM:

MSM is naturally occurring organic form of dietary sulfur. Sulfur is the fourth most abundant mineral found in the human body. The body uses sulfur in many processes, including collagen synthesis, cell oxygenation, carbohydrate metabolism and the maintenance of balance between acidity and alkalinity. These processes consume sulfur which must be replenished. MSM is found in several raw foods - milk, fresh fruit, raw vegetables, fish and meat.

- MSM is probably the most important substance for the prevention of allergies since the discovery of the antihistamine over 40 years ago.
- MSM relieves burning eyes, running nose, hoarseness associated with allergies to pollens, dust and molds.
- MSM is beneficial in stabilizing the digestive process.
- MSM is a valuable addition to hair growth.
- MSM reduces the pain, soreness and inflammation associated with injured, strained, or cramped muscles and over-extended joints.

## SO WHAT IS A PREBIOTIC?

A prebiotic is "a non-digestible food ingredient that beneficially affects the host by selectively stimulating the growth and/or activity of one or a limited number of bacteria in the colon, that can improve the host health."

**Pre-biotic Examples**

- Fructo-oligosaacharides (FOS) commonly found in Inulin, Chicory, Alfalfa Meal and Barley.
- Mannanoligosaccharides MOS is an extract naturally derived from the cell walls of Saccharomyces cerevisiae (Saccharomyces cerevisiae fermentation extract), more commonly known as brewer's yeast.

## SO WHAT IS A PROBIOTIC?

Probiotics: "A live microbial food supplement, which beneficially affects the host animal by improving its intestinal microbial balance...Some examples of probiotics include yogurt (acidophilis), and pectiv (found in fruit). Strains should be resistant to pH so they can survive passage through the stomach and be resistant to acid and bile. Also, probiotics should adhere to the intestinal epithelium (membrane tissue) and be able to inhibit pathogens (living microorganisms such as bacteria or fungus)." Recent findings show that probiotics may have potential in the prevention of food allergies and possibly in the prevention of infections in general. "Although supplementing probiotics is always an option, it stands to reason that if you provide a food source to the intestinal bacteria that are already in their natural habitat, they will grow more robustly.

# Cat Considerations

## SPECIAL CONSIDERATIONS FOR CATS:

**Feline Lower urinary Tract Disease (previously referred to as Feline Urological Syndrome or FUS)**

Diseases of the lower urinary tract occur frequently in cats, affecting the bladder and/or the urethra (the tube that carries urine from the bladder to the outside of the body). Most cats with lower urinary tract disease show remarkably similar signs, but to varying degrees. Cats will strain and make frequent and prolonged attempts to urinate, but usually the amount of urine passed during each attempt is quite small. Affected cats tend to lick their genital area excessively, and sometimes they will urinate outside the litter box, often preferring cool, smooth surfaces like a tile floor or a bathtub. Occasionally, there will be blood present in the urine.

## CAUSES:

There are many causes of urethral obstruction in cats, but the two most common are uroliths and urethral plugs. Urethral plugs consist of a soft, compressible material that contains variable quantities of minerals, cells and cellular debris, and mucus-like protein. Many factors interact to produce uroliths and urethral plugs; viruses, bacteria, diet, decreased water consumption, physical inactivity, urine retention, stress, and urine Ph may all contribute.

One of the easiest ways to achieve an acidic diet it to feed a highly digestible meat based diet, as an acidic urine will naturally be achieved.

Mineral Deposits also have a greater tendency to form in urine that is highly concentrated or that is retained in the bladder for long periods of time. To encourage adequate water consumption, and thus the formation of urine that is more dilute, fresh water should be available to cats at all times.

# Dry vs. Canned Food

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## DRY VS. CANNED FOOD CONTENTS ( DRY MATTER CONVERSION)

Do you ever wonder how to compare the percentage of contents of dry food to canned food? While most of us may not even think about this, owners of pets with special protein, fat, or fiber requirements may find the following conversion formula of benefit. This formula works for any dry, canned or semi moist product that has a guaranteed analysis on it label.

First, identify the moisture percentage of a given food. Subtract this number from 100% and you get the dry% of the particular product. This number is then used as the divisor for the protein, fat, fiber, etc. to calculate the actual dry matter basis of each component of the particular product.

***For example:***

X Brand Canned Dog Food is 78% moisture; subtracted from 100% = 22% dry (non -moisture).

To calculate the protein, fat and fiber take the divisor, 22%, and divide that into each ingredient.

8.0% protein divided by 22% = 36.36% protein 100% dry matter basis

5.5% fat divided by 22% = 25% fat 100% dry matter basis

1.5% fiber divided by 22% = 6.82% fiber 100% dry matter basis.