Preventive Nutrition of Dental Disease

Dental disease is the most commonly diagnosed medical problem of felines, based on a recent survey of 14,000 cats in the United States. Many people might ask themselves, truly, what kind of impact having even minor dental disease would have on their cats? Dental disease can have a significant effect on the general and breeding health of any afflicted cat. Dental pathology will cause oral pain, even though most cats show no outward signs of discomfort like pawing at the mouth. Oral pain can lead to a cat having a decreased appetite or to swallowing its food whole. By swallowing food, this can result in an increased incidence of regurgitation or vomiting and poor digestibility of the food. Any feline fancier understands how easy it is for a cat to become averse to its food if they experience frequent episodes of vomiting. Chronic pain will also change a cat's demeanor, making handling sometimes difficult. These influence the owner's ability to maintain an ideal body condition and the pedigreed cat's performance in the show ring.

Apparent infertility in males can be related to dental disease. If a tom has a painful mouth, he may not grasp the queen with enough force to keep her immobile or may not even want to breed the queen. Oral health is equally important for queens. When the kittens are born, the queen will clean off fetal tissues and fluid. This has a dual function of preventing hypothermia and stimulating breathing. The queen continues by severing the umbilical cord; this is a direct connection to the neonate's bloodstream. If she has dental disease, the pathogenic bacteria load in her mouth is higher and this could lead to direct infection of the neonate. The kittens continue to need the queens grooming, particularly to stimulate urine and fecal elimination. A diseased mouth may deter a queen from performing these functions and increase the risk of infection to the neonate, resulting in an increased morbidity of kittens during and after birth. Additionally, queens need to take in a tremendous amount of energy during pregnancy and lactation to meet her body's demands. If she is reluctant to eat, this can cause her to lose body condition, not maintain a pregnancy, and have inadequate milk production.

Dental disease begins with plaque build-up on the crown of the tooth. Dental plaque is a combination of bacteria, polysaccharide (sugar) matrix, cellular debris, and food. Bacteria within the mouth produce a lattice like structure of sugars on the crown and this traps cellular debris and food. Plaque build-up occurs very quickly; often in as little as 6 hours after teeth have been cleaned. If a dental hygiene is not instituted at this time, the plaque will incite an inflammatory response called gingivitis. This inflammatory process creates a suitable environment for proliferation of pathogenic bacteria, further exacerbating the gingivitis. Plaque eventually turns into calculus (tartar); this occurs as the bacteria incorporate calcium into the polysaccharide matrix resulting in mineralization. Calculus, due to its rough surface, provides ample opportunities for plaque formation. As the build-up on the tooth continues and inflammation worsens, this can spread to below the gum line and affect the ligament that attaches the tooth to the jaw bone (periodontal ligament). When inflammation and infection has spread to the periodontal ligament, this damage is irreversible. If the damage becomes severe enough, the tooth will become loose and need to be extracted and bacteria may enter the bloodstream and cause infection in other organs. The key is to minimize the occurrence of plaque and calculus formation through a comprehensive dental health program, including brushing, diet, and regular veterinary care.

Even though the dental disease proceeds in the same manner, regardless of breed of cat, some cats are more likely to be affected by dental disease. This depends on facial conformation and genetic predisposition of the individual cat. Breeds with a brachycephalic skull structure, are more prone to dental disease formation. These cats have a shortened jaw structure and relatively normal tooth size, which commonly results in crowding of teeth and misalignment within the mouth. Crowding and misalignment produce nooks and small gaps between teeth that facilitate the formation of plaque and calculus.

Genetic predisposition can also have a significant impact on the occurrence of dental disease. With genetic variation comes differing responses to plaque and calculus. Some cats may have a very exaggerated

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Right side before dental cleaning

inflammatory response to a small amount of plaque, while others do not. The cats with this exaggerated response, naturally, are more likely to develop significant amount of dental disease in a shorter time period, because dental disease is self-perpetuating.

As alluded to earlier, there are key components to a dental disease prevention program. Ideally, an owner is brushing the cat's teeth daily to minimize plaque formation. Unfortunately, we cannot always control certain factors in this undertaking like, the cat's acceptance of brushing, time constraints of the owner(s), and the physical limitations of brushing (i.e. only the outside surface of the teeth are brushed). This is why nutritional management of dental disease is so beneficial; it is easily integrated into a cat's daily activities. There are several preventive components that may be integrated into the food to prevent the formation of either plaque or calculus. The key with any preventive program is to institute it before the disease process becomes established. The ideal approach is to integrate dental health properties into feline foods, starting when adult teeth begin to erupt at 4 months of age. These preventive aspects need to be continued throughout adulthood and particularly as the cat reaches its geriatric years.

The first aspect is the mechanical production of the kibble itself. This refers to how the kibble is extruded during production. A normal extrusion results in a less porous kibble, this means that the tooth doesn't penetrate as far into the kibble before it breaks. A longitudinal extrusion rectifies this problem. This kibble is more porous, allowing better tooth penetration before breaking, providing a scrubbing action to reduce plaque accumulation.

Nutritional prevention of dental disease also includes chemical agents. A mineral, sodium tripolyphosphate (STPP), has been studied extensively to determine its role in preventing dental disease. This nutrient is important in preventing calcium from being integrated into plaque and turning it into calculus. STPP binds to the calcium making it unavailable to the bacteria in the mouth. When this complex enters the stomach, the stomach acid releases the calcium from the nutrient complex. This allows the calcium to be utilized as it normally would in the body, which is especially important in ensuring normal skeletal development in kittens.

The last mechanism of nutritional prevention is a group of nutrients that inhibit bacterial replication, green tea polyphenols. They are powerful antioxidants that have been shown to decrease bacterial replication within the mouth. By decreasing the amount of bacteria within the mouth, the amount of plaque that that the bacteria are able to form is naturally reduced. The integration of these powerful, nutritional preventive aspects into feline diets provides the most innovative and scientifically proven dental health features to benefit your cat at any life stage.