

Quantifying Canine Calculus

Kendall Taney, DVM, DAVDC, FAVD

Center for Veterinary Dentistry and Oral Surgery

Gaithersburg, Maryland

In the Literature

Wallis C, Allsopp J, Colyer A, Holcombe LJ. Validation of quantitative light-induced fluorescence for quantifying calculus on dogs' teeth. *J Vet Dent*. 2018;35(3):187-194.

FROM THE PAGE ...

Tooth brushing is considered the gold standard for preventing plaque and calculus buildup on dog teeth; however, pet owner compliance is often poor. Several studies have evaluated the efficacy of bones, various chews, specially textured diets, chelating agents, antimicrobials, and water-containing functional ingredients as alternatives to tooth brushing. Studies that evaluate these products must use a method of plaque and calculus quantification to demonstrate changes in calculus formation. Accurate evaluation of the quantity of plaque and calculus on dog teeth is therefore essential to allow for measurement of product efficacy.

In this study,* 26 miniature schnauzers were enrolled in a crossover study evaluating the effect of a daily



▲ **FIGURE 1** Subjectively, this dog has grade 2/3 calculus on many teeth. Gingivitis is evident at the free gingival margin, particularly over the maxillary canine and the maxillary fourth premolar tooth.



▲ **FIGURE 2** The patient in *Figure 1* after professional dental cleaning. Gingivitis should resolve over the next several days without the presence of calculus causing irritation.

*This study was funded by the WALTHAM Centre for Pet Nutrition (Mars Petcare).

dental chew on calculus buildup as compared with no chew. The amount of calculus was measured using 2 methods: the Warrick-Gorrel calculus index method, in which trained examiners assign a predefined category for calculus coverage and thickness, and the quantitative light-induced fluorescence method (QLFM), which uses a tool to acquire images of the teeth, followed by software analysis of the images to determine the average percentage of calculus present. The objective of this portion of the study was to determine if the QLFM was a viable tool for quantifying the amount of calculus on dog teeth.

QLFM was found to be a sensitive and precise method for quantification of calculus on dog teeth. The authors concluded that QLFM can remove the subjective element of human examiners and has greater accuracy and reduced variability. This method may also allow for smaller sample sizes in studies quantifying calculus.

... TO YOUR PATIENTS

Key pearls to put into practice:

- 1** Reduction of plaque and calculus can have a significant effect on the prevention of periodontal disease progression. Daily tooth brushing is recommended, and continual periodontal care is key.^{1,2}
- 2** Use of calculus quantification methods are essential for determining efficacy of calculus reduction in dental products. It is important for clinicians to know which products have been the subject of studies determining their ability to reduce plaque and tartar. The Veterinary Oral Health Council (VOHC) was established to define standardized protocols for product efficacy testing; products that meet VOHC's standards for plaque and calculus reduction are awarded the VOHC seal of acceptance.
- 3** Resources should be consulted before making recommendations to pet owners on which dental products may be best for their pet (see *Suggested Reading*).

References

1. Harvey C, Serfilippi L, Barnvos D. Effect of frequency of brushing teeth on plaque and calculus accumulation and gingivitis in dogs. *J Vet Dent*. 2015;32(1):16-21.
2. Ingram KE, Gorrel C. Effect of long-term intermittent periodontal care on canine periodontal disease. *J Small Anim Pract*. 2001;42(2):67-70.

Suggested Reading

American Veterinary Dental College. American Veterinary Dental College website. <https://www.avdc.org>. Accessed March 21, 2019.

Veterinary Oral Health Council. Veterinary Oral Health Council website. <http://www.vohc.org>. Accessed March 21, 2019.

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DESCRIPTION: VETORYL Capsules are an orally active synthetic steroid analogue that blocks production of hormones produced in the adrenal cortex of dogs.

INDICATION: VETORYL Capsules are indicated for the treatment of pituitary- and adrenal-dependent hyperadrenocorticism in dogs.

CONTRAINDICATIONS: The use of VETORYL Capsules is contraindicated in dogs that have demonstrated hypersensitivity to trilostane. Do not use VETORYL Capsules in animals with primary hepatic disease or renal insufficiency. Do not use in pregnant dogs. Studies conducted with trilostane in laboratory animals have shown teratogenic effects and early pregnancy loss.

WARNINGS: In case of overdosage, symptomatic treatment of hypoadrenocorticism with corticosteroids, mineralocorticoids and intravenous fluids may be required. Angiotensin converting enzyme (ACE) inhibitors should be used with caution with VETORYL Capsules, as both drugs have aldosterone-lowering effects which may be additive, impairing the patient's ability to maintain normal electrolytes, blood volume and renal perfusion. Potassium sparing diuretics (e.g. spironolactone) should not be used with VETORYL Capsules as both drugs have the potential to inhibit aldosterone, increasing the likelihood of hyperkalemia.

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 **VETORYL® CAPSULES**
(trilostane)

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