

PLAQUE REDUCTION EFFECTIVENESS OF C.E.T. DENTAL CHEW (VIRBAC) IN BEAGLE DOGS *

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A raw hide dental chew (CET dental chew, Virbac, Inc.) has been tested for its potency to reduce plaque accumulation in dogs.

MATERIALS AND METHODS

- 22 female adult Beagle dogs, aged 13-22 months and weighing 8.4-12.7 kg were selected.
- They had normal mesocephalic occlusion, full dentition and absence of periodontitis (no loss of attachment) though plaque and calculus accumulation.
- At the beginning of the study (Day 1), all dogs had their teeth thoroughly scaled and polished under general anaesthesia.
- Dogs were divided in two groups (CET dental chew and control groups). On a pretest phase, the first 11 dogs taking and chewing spontaneously the raw hide were included in the chew test groups. The remaining 11 dogs were included in the control group.
- During the 7 days of the trial, dogs were fed commercial extruded pellets and water ad libidum.
- In the test group, large CET dental chews were offered twice a day, after feeding for the afternoon occasion. Dental chews were given less than 6 hours after the end of scaling/polishing.
- At day 8, all dogs were placed under general anaesthesia and plaque accumulation was assessed using two standard dental index systems (Silness and Løe plaque index and Turesky plaque index).

SCORING SYSTEMS

- Silness and Løe plaque index system (1):

The tooth surface is gently dried with the air syringe of the dental unit. Plaque is detected first with the naked eye, then assessed by running a probe on the neck of the tooth along the gingival margin and assessing the amount of plaque collected this way. *Four sites (distal-facial, facial, mesial-facial, lingual) are assessed around the tooth in the original index system.* The present modification consists in the assessment of three sites only : disto-facial, facial, mesio-facial). 2.5 X magnification glasses are used to differentiate between score 0 and 1 when no plaque is seen with the naked eye.

0 = no plaque in gingival area

1= film of plaque adhering to the free gingival margin. The plaque may only be recognized by running a probe across the tooth surface at the entrance of the gingival sulcus.

2= moderate accumulation of soft deposits within the gingival sulcus or pocket, on the gingival margin and/or adjacent tooth surface

which can be seen with naked eye

3= abundant soft matter within the gingival sulcus or pocket in pocket and/or adjacent tooth surface which can be seen with naked eye.

- Turesky index (2): the buccal surface is assessed as a whole.

Plaque is disclosed using erythrosin solution and only plaque coverage is assessed.

0 = No plaque

1 = Separate flecks of plaque at the cervical margin of the tooth.

2 = A thin continuous band of plaque (up to one mm) at the cervical margin of the tooth.

3 = A band plaque wider than one mm but covering less than one-third of the crown of the tooth.

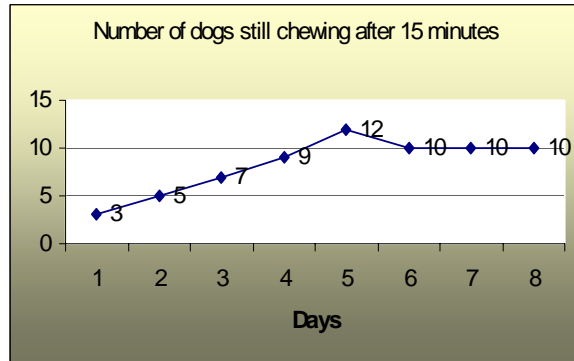
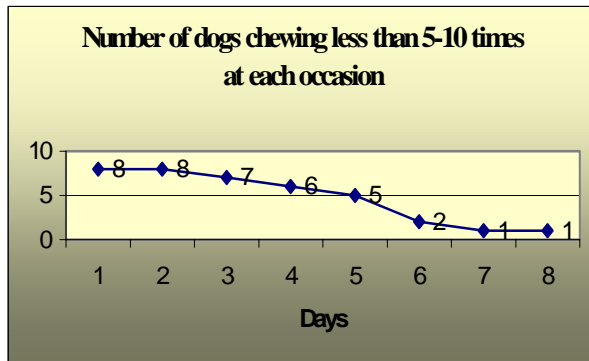
4 = Plaque covering at least one-third but less than two thirds of the crown of the tooth.

5 = Plaque covering two-thirds or more of the crown of the tooth.

- Clinical follow-up : chewing was assessed each time the CET dental chew was distributed.
- Statistical analysis : A student's t-test statistical analysis was performed to compare the means in treated and non treated groups.

RESULTS

1. Chewing



Dogs were not selected based on an active chewing behaviour. Subsequently, it is not surprising to see that during the first days dogs were not actively chewing the CET chews during a long time. Through the study all dogs increase both the number of time they chew and the duration of chewing.

2. Plaque reduction

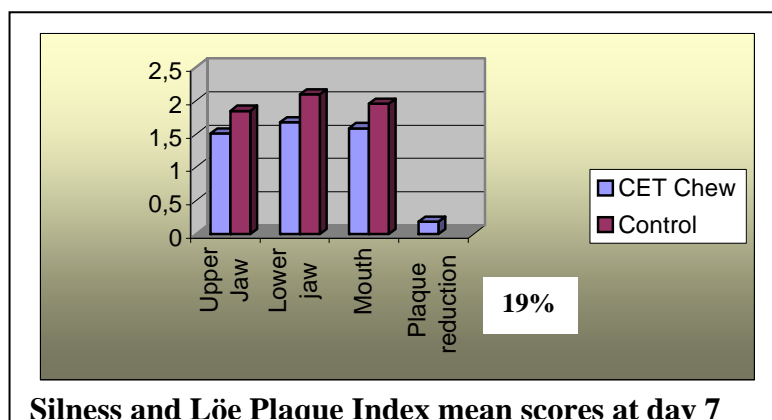
| GROUP | | UPPER JAW Mean score | LOWER JAW Mean score | Mean Mouth Score |
|---------------------|------|-------------------------|-------------------------|---------------------|
| CET Chew | MEAN | 1,51 | 1,68 | 1,59 |
| | S.D. | 0,24 | 0,23 | 0,23 |
| Control | MEAN | 1,85 | 2,10 | 1,96 |
| | S.D. | 0,18 | 0,24 | 0,19 |
| Plaque Reduction | | 18% | 20% | 19% |

Silness & Löe Plaque Index at Day 8 - Mean scores

| GROUP | | UPPER JAW Mean score | LOWER JAW Mean score | Mean Mouth Score |
|---------------------|------|-------------------------|-------------------------|---------------------|
| CET Chew | MEAN | 3,23 | 3,62 | 3,40 |
| | S.D. | 0,48 | 0,60 | 0,48 |
| Control | MEAN | 4,02 | 4,44 | 4,21 |
| | S.D. | 0,32 | 0,40 | 0,34 |
| Plaque Reduction | | 19,6% | 18,4% | 19% |

Turesky Plaque Index at Day 8 - mean scores

A significant difference ($p < 0.05$) was observed between mean scores for upper and lower jaws as well as for the whole mouth in the CET chew group compared to the non-treated group.



DISCUSSION : Periodontal disease is induced by dental plaque. In order to prevent development and progression of gingivitis, dental plaque accumulation has to be controlled. To date, the best way to achieve plaque control is regular toothbrushing. Other means, though not as efficient, can help by reducing plaque accumulation on tooth surfaces. Mechanical removal of plaque through chewing activity has recently gained interest. A 19% significant plaque reduction was achieved after a week in beagle dogs fed a specific dry food (Prescription diet Hill's t./d) (3). A 14% significant plaque reduction was achieved after a week in beagle dogs fed daily a dental hygiene chew (Rask, Pedigree) (4). These studies used an index system to score plaque accumulation which may overestimate plaque reduction by giving too much weight on plaque removal on the coronal half of the tooth (5). In the present study, two original index systems were used to better assess plaque reduction at the gingival margin. Results show a 19% significant reduction in plaque accumulation in the group fed daily the CET dental chews. Dogs were not selected based on their chewing ability which better reflects what random pets would do. However, by incorporating dogs with various chewing willingness in the study, the results may underestimate the true effectiveness of the chew. Better results might have been obtained with a group of dogs selected on their active chewing behaviour.

CONCLUSION : CET dental chews fed twice daily have been shown to significantly reduce plaque accumulation in the dog and can be advocated as a means to improve oral health.

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