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Periodontal disease affects sense of smell.

Field test.

Predilection to dental calculus formation tested in a group of dogs and the influence of calculus on the sense of smell.

Dr Erin Mayfield (medical doctor and gynaecologist was horrified by the pandemic of periodontal disease, which appears to be precipitated by the artificial dog pre-processed commercial food diets and some home prepared and home cooked diets.

The tendency of some dogs to rapidly develop dental calculus is well known and also the reasons their off.

A group of beagle dogs being utilized in a study of bovine estrus detection capability was found to have such a tendency.

Over a period of several months, it was observed that these dogs gradually lost the ability to perform the trained detection task – a normal attribute in these dogs.

Subsequent examination revealed extensive tartar on the teeth of each of the dogs.
Behavioural olfactometry was used to determine the olfactory threshold.
For each individual the threshold was significantly depressed from the average.
1. The teeth were cleaned and the behavioural olfactometry repeated the following day.
In each case, the olfactory threshold returned to normal.
Subsequent olfactory threshold determinations were made, following the dogs for 3 months.
The olfactory threshold was depressed in a rough correlation to the repeated development of dental calculus.
2. This finding strongly suggests that a major factor in the efficacy of detector dogs (**the ability so smell**) is good dental health, and, further, that dogs with tendency to rapidly form dental calculus should be selected against within any breeding program.
3. Dr Larry Myers's suggestion to use breeding programs - expensive, slow and unreliable - as a solution seems at odds with the known biology of calculus accumulation.
Otherwise, the research appears to be a major contribution to carnivore health.
Customs agencies, bomb detection units, police forces, hunters and anyone dependent on the canine nose has reason to celebrate.

The bigger the breakthrough.
What are the mechanisms?
What is the purpose of a canine's ability to detect odours?
In addition, perhaps more importantly - what is the purpose of this measurable loss of olfaction correlated with an increase in calculus formation?

4. *Dr Erin Mayfield with Dr Johan Joubert* - veterinary dentist and cybernetician, came to the understanding that while a good sense of smell in the carnivore is important, the rapid loss of that sense,

correlated with a build-up of calculus, might in the scheme of things be equally important.
Also we postulate that the vomero - nasal organ (*Organ of Jacobson, Ludvig Jacobson 1813*) might be involved in this dramatic finding.
5. The vomero-nasal organ is described as part of the olfactory sense system that consists of a pair of fleshy tubes found on the floor of the nasal cavity on either side of the nasal septum, supported by cartilage sleeve.
Probably concerned with scenting and after smell of food.

6. "Keverne" remarked the nature of stimulus access [fluids pass through an opening behind the upper incisors] suggests that the vomero-nasal organ responds to non-volatile cues, leading to activation of the hypothalamus by way of the accessory olfactory bulb and amygdala.
The areas of hypothalamus innervated regulate reproductive, defensive, and invective behaviour as well as neuroendocrine secretion.

If foul fluids from diseased teeth and gums gain immediate access to the vomero-nasal organ and if those fluids have a negative effect on sense of smell, reproductive, defensive, in-gestive and neuroendocrine functions, then we have a powerful set of determinants for the health and wellbeing of the subject animal.

Regardless of putative mechanisms, Dr Myers's work on olfaction shows that animals with periodontal disease suffer impaired ability to detect prey, competitors and enemies - a dismal prospect for the individual carnivore already conspicuous by its bad breath - but, in the scheme of things, doubly advantageous for prey animals, competitors and enemies.

7. This scenario, if correct, has direct correlation with the predictions of the Cybernetic Hypothesis of "Periodontal Disease" in Mammalian Carnivores.

The Hypothesis explains that regulators, carnivores, need regulating and in the absence of sufficient prey that there needs to be a feedback loop, preferably with high ‘gain’, leading to the rapid demise of redundant carnivores.
Failing hunters become the hunted and balance is thereby maintained.

8. The Cybernetic Hypothesis sets out a uniting paradigm of health and disease for animals - with far-reaching implications for human health too.
If Dr Myers’s work demonstrates a high-gain feedback loop then it appears to provide a crucial test for the Hypothesis.
If the Hypothesis passes the test then elevation to accepted theory comes closer.
If adopted as a theory Cybernetics can provide the foundation for new cures and ‘miracle preventions’.