

ISOLATION AND CHARACTERIZATION OF BACTERIA THAT CAUSE PERIODONTITIS IN DOG BREEDS POODLE, PEKINGESE IN BITOLA REGION

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ABSTRACT

In this study, 12 samples from clinical cause dog breeds: Poodle and Pekingese. The samples were taken in the Bitola region for the period from January 2015 to April 2017. Totally 12 strains were isolated and identified based on their growth, colony morphology, Gram stain, catalase and oxidase activity using standard protocols. From the results obtained, it can be concluded that the most common bacteria that cause periodontitis in dog from the above-mentioned races are: *Staphylococcus spp*, *Escherichia spp* and *Streptococcus spp*, which further cause and additional complications in their state of health.

Key words: Dogs, Periodontitis, Bacterial causes, Poodle, Pekingese.

I. Introduction

The diseases of the oral cavity and teeth are one of the most frequent problems in pets. They are connected with the general health of the pets, in case of worsening the health of the oral cavity and teeth, all that is connected with the other systems in the organism. In that case comes to dysfunction of the most important organs like the heart, kidneys and the brain. Because of these problems we must to turn a big attention to the health of the teeth and the oral cavity.

The sciences which is interested with the health problems of the periodontal tissue and allows setting diagnose, prevention and treatment of the periodontal diseases for preventing protection of the periodontal health is called periodontology (Harvey & Emily, 1993; Roman et al., 1995).

The periodontal diseases are one of the most represented diseases of the oral cavity in dogs, which include 80% of them (Riggio et al., 2011).

The periodontal tissue contains more components including: teeth, gums, cement, alveolar bone and periodontal ligament. Those components allow support and protection of the teeth (Harvey & Emily, 1993; Roman et al., 1995; De Marco & Gioso, 1997; Clarke, 2001).

Regarding dental anatomy, dogs like all mammals have two dentitions: milk teeth (*dentec decidui*) and second teeth (*dentec permanentes*). All components that surround the teeth are important for their support and protection.

The etiology of the periodontal disease is from multifactorial nature, which includes more factors like: bacterial layer, microflora, immunology, saliva, breed predisposition, cleaning teeth, and the type of the food. The bacterial layer are primary etiological factor, which contains Gram – positive, aerobic, immobile bacteria in the first stage of the infection and Gram – negative, mobile bacteria in the last stages of the disease (Harvey & Emily, 1993; Gioso, 2007).

This progressive disease includes two stages: gingivitis (reversible) and periodontitis (irreversible). The basic causes of this disease are teeth layers that are agglutinative like smooth membrane, contaminated with saliva, bacteria and cell debris. The agglutinative bacteria have toxic products which cause inflammation of the soft tissue and that process is progressive in the gingival sulcus and that can cause losing periodontal ligament, bone and teeth. All that can cause consequences which can be fatal for the animal and can cause death. This disease can make serious systemic disorders, like malnutrition and other infections.

The most represented bacteria which are the basic reason for those problems are Streptococcus, Staphylococcus and Enterococcus.

Diagnosing the periodontal disease is made by history, clinical control and x- rays. All changes in the chewing food can present oral diseases. When the animal has periodontal disease the basic observation in owners is smelly odor (halitosis) (Emily & Penman, 1994; Gorrel, 2004; Gioso, 2007).

II. Material and Methods

1. Samples

A totally 12 samples were taken from different ages of dog breeds: Poodle and Pekingese in Bitola region Table.1

2. Isolation

Totally 12 stains samples were isolated Table.2

3. Characterization and identification

The different pure culture obtained were characterized for their colony morphology, Gram staining, cell morphology, catalase and oxidase reaction using standard protocols.

Table.1 Samples from clinical cases of dogs of breeds Poodle and Pekingese (breed, ages and their sex).

<i>Sample</i>	<i>Year</i>	<i>Breed</i>	<i>Age(Year)</i>	<i>Sex</i>
<i>1</i>	<i>2015</i>	<i>Pekingese</i>	<i>5,5</i>	<i>Male</i>
<i>2</i>	<i>2015</i>	<i>Poodle</i>	<i>5</i>	<i>Female</i>
<i>3</i>	<i>2015</i>	<i>Poodle</i>	<i>6</i>	<i>Male</i>
<i>4</i>	<i>2015</i>	<i>Pekingese</i>	<i>4,5</i>	<i>Female</i>
<i>5</i>	<i>2016</i>	<i>Poodle</i>	<i>5,2</i>	<i>Male</i>
<i>6</i>	<i>2016</i>	<i>Poodle</i>	<i>4,2</i>	<i>Female</i>
<i>7</i>	<i>2016</i>	<i>Pekingese</i>	<i>3,9</i>	<i>Female</i>
<i>8</i>	<i>2016</i>	<i>Pekingese</i>	<i>4,7</i>	<i>Male</i>
<i>9</i>	<i>2017</i>	<i>Poodle</i>	<i>4</i>	<i>Female</i>
<i>10</i>	<i>2017</i>	<i>Pekingese</i>	<i>6,8</i>	<i>Female</i>
<i>11</i>	<i>2017</i>	<i>Poodle</i>	<i>6,2</i>	<i>Female</i>
<i>12</i>	<i>2017</i>	<i>Poodle</i>	<i>4,4</i>	<i>Male</i>

Table.2 Strains were isolated and identified

<i>Sample</i>	<i>Strains</i>	<i>Sample</i>	<i>Strains</i>
1	K1	7	K7
2	K2	8	K8
3	K3	9	K9
4	K4	10	K10
5	K5	11	K11
6	K6	12	K12

III. Results and Discussion

<i>No</i>	<i>Breed</i>	<i>Bacterial causes</i>	<i>No</i>	<i>Breed</i>	<i>Bacterial causes</i>
K1	Pekingese	<i>Staphylococcus spp</i>	K7	Pekingese	<i>Streptococcus spp</i>
K2	Poodle	<i>Escherichia spp</i>	K8	Pekingese	<i>Staphylococcus spp</i>
K3	Poodle	<i>Staphylococcus spp</i>	K9	Poodle	<i>Escherichia spp</i>
K4	Pekingese	<i>Staphylococcus spp</i>	K10	Pekingese	<i>Escherichia spp</i>
K5	Poodle	<i>Staphylococcus spp</i>	K11	Poodle	<i>Streptococcus spp</i>
K6	Poodle	<i>Escherichia spp</i>	K12	Poodle	<i>Streptococcus spp</i>

From the results presented in Table 3 it can be concluded that the most commonly isolated bacterial causes of inflammation of the periodontitis in dogs of the breeds Poodle and Pekingese in Bitola region are *Staphylococcus spp* 41,7 %, *Escherichia spp* 33,3% *Streptococcus spp* 25%. These findings agreed with the results of other studies. (Gibbons et al., 1972, Tanzer et al., 1974, Dunchin et al., 1978, Slee et al., 1983, Slee et al., 1983, Corner et al., 1988, Murray et al., 1992, Harvey et al., 1993, Lang et al., 1997, Dominigues et al., 1999, Loesche et al., 2001, Katsuea et al., 2001, Drummond et al., 2004, Roza et al 2004, Swerts et al., 2005, Senhorinho et al., 2011).

Recommendations:

The credentials for preventing those diseases and problems in pets are:

Regularly cleaning tartar and teeth layers with ultrasound.

Regularly brushing the teeth of the pets with special soft brushes. We must not use toothpaste because of the xylitol that can be toxic for the dogs.

Using chewing aids that can reduce teeth layers.

Using fluids which can also reduce the production of the teeth layers.

The medical treatment of the disease can be difficult if we don't react fast, because this is a progressive disease. The treatment of this disease includes antibiotics combined with ejecting the tartar and in the most difficult situations are used surgical technics.

IV. References

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