

Proceeding Paper

Teeth Follow-Up throughout the Life of the Dromedary: Zootechnical and Veterinary Importance [†]

Mabrouk Mouldi Seddik

Livestock and Wildlife Laboratory, Institute of Arid Regions, Medenine 4119, Tunisia;
mabrouk.seddik16@gmail.com

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Abstract: The dromedary camel is a domestic animal in arid and desert regions. Its oral cavity has evolved to allow the ingestion of desert plants, often not consumed by other species. Indeed, the teeth of this species present anatomical peculiarities specific to pseudo-ruminant animals by their forms, their arrangements, their formulas, and their kinetics of eruption and wear. With 22 deciduous and 34 permanent teeth, including 2 incisors and 2 canines in the upper jaw and 6 incisors and 2 canines in the lower jaw, estimating the age of a dromedary remains difficult for most clinicians. This accurate age determination is very important not only for breeders and young promoters when purchasing animals but also for the clinician when performing veterinary or zootechnical examinations. This work was carried out in a herd of 70 camels belonging to the Arid Lands Institute (IRA Tunisia) and is based on a monthly and annual follow-up and examination of the morphology of the teeth (eruptions, replacements, and wear) throughout the life of the dromedary.

Keywords: teeth; estimation age; dromedary camel

1. Introduction

In camel breeding, the follow-up of the animals is not so easy, and the determination of the age is very important in veterinary semiology. The dentition remains of great importance in the estimation of the camel age by the breeders, so like all other mammals, camels have temporary or permanent teeth. This species has 22 deciduous teeth and 34 permanent teeth [1,2].

2. Material and Methods

This work was based on a monthly and annual follow-up and examination of the morphology of the teeth (eruptions, replacement, and wear) throughout the life of the dromedary. It was carried out in the IRA herd of 70 dromedaries in a semi-extensive system grazing halophilic plants during the day (6 to 7 hours) and receiving 2 kg of mixed feed (40% crushed barley, 40% olive cake, 15% bran, and 5% CMV) in the afternoon. The observed camels were in good health, treated monthly against ectoparasites, dewormed annually in early spring, and raised in semi-extensive systems owned by the Arid Lands Institute (Medenine, Tunisia). This survey involved different age groups, including young animals from birth to 4 years, adults from 5 to 20 years, and cull animals from 21 to 30 years, in order to facilitate the estimation of the age of this species.

3. Results and Discussion

The dental formula of the young dromedary is composed of a total number of 22 temporary or deciduous teeth divided into incisors: 2/6; canines 2/2; premolars 6/4. In contrast, the number of adult or replacement teeth is 34 [3], and their structure is as follows: In the upper jaw, there are 2 incisors, 2 canines, 6 premolars, and 6 molars; While



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in the lower jaw, there are 6 incisors, 2 canines, 4 premolars and 6 molars. The size of the deciduous teeth was smaller than that of the permanent teeth. A clear difference was observed when they were present with the permanent teeth on the animal's jaw [2]. The determination of the age of the camel was based on the examination of the incisors and canines of the upper and lower jaws. The dromedary camel is born without teeth. After one week of age, the incisor pincers appear, and after two weeks, the pair of temporary intermediate incisors appear. In addition, after one month of age, the corner incisors appear. Between 2 and 4 months of age, the canines of the lower jaw appear, while those of the upper jaw appear between 8 and 12 months of age. In fact, at the end of the first year of age, the species completes its milk teeth. At 3.5 years of age, there is a very important wear to the deciduous incisors; all incisors have a pronounced neck. Thus, the camel begins to replace its deciduous teeth with permanent teeth when it reaches the age of 4 years. The permanent teeth are larger, longer, and darker in color and do not have the well-defined neck that joins the temporary teeth. Therefore, by four to five years of age, both pincers fall out, and two new incisor pincers emerge. At five to six years, the second incisors (intermediate teeth) fall out, and two new incisors emerge. From six to seven years of age, the third incisors (corners) fall out, and two new incisors appear. Thus, at the age of seven, the camel completes the appearance of permanent incisors. At the age of eight, the permanent canines appear, and the shape of the incisors is completed; this is called "full mouth". In the 10-year-old camel, all permanent canine teeth (upper jaw corners, all first premolars of the permanent teeth) are well developed. In addition, a little wear is observed on the incisor pincers. At the age of 12 years, the incisors are more worn with a bi-angular pincer-like surface. At age 15, the surface of the pincer teeth is semicircular, and the intermediate incisors are bi-angular. At the age of 17, a black dot can be seen on the surface of the claw teeth, called a radical star. At the age of 18, the surface of the claws appears oval, and the intermediate incisors are semicircular. At the age of 20, wear of the canines on the lower jaw is observed with a bi-angular surface shape. At age 22, wear of all teeth is observed with a spacing of the incisor teeth; in addition, the surface of the claws and intermediate incisors appears circular; this observation has not been reported in other studies [4–6]. In addition, at the age of 24–28 years, the incisors appear triangular with the persistence of the black pulp cavity.

4. Conclusions

The monitoring and examination of the morphology of camel teeth throughout its life require good restraint of the animal, which is not easy for this species. However, this age estimate remains very important for any breeding management where the productive life of the animal rarely exceeds 25 years. The wearing kinetic depends mainly on the used breeding system and the pastoral plant cover.

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