

Comparison of the CMT Test Results Carried Out on Camels and Bovines [†]

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Abstract: Subclinical intra-mammary infection is a very current disease in dairy females; several early tests exist for their detection: California Mastitis Test (CMT), Electrical Conductimetry of milk (CE), pH indicator papers. In this study, the milk of 104 cows (416 quarters) was tested using CMT (Raidez[®]) to first estimate the prevalence of the disease and to identify the effect of age, stage of lactation and position of neighborhoods on its prevalence; second, we looked for data related to camels from another study carried out on 57 camels (in Algiers (ENVH), starting with the hypothesis that the camel is more resistant. The prevalence rate (CMT > 1) is around 45% for cows and 15% for quarters. The study conducted in Algiers yielded a rate of 67% (for camels and 35% for quarters, i.e., an increase of 130% for quarters and 50% for animals. Our study emphasizes the impact of the last stage of lactation compared to the first (35% vs. 15%), which is in agreement with the other study; on the other hand, the effect of the posterior position of the teats and age was contradictory. The differences between the rates were not significant at $p < 0.05$ between neither the animals or quarters (Chi 2: 53.24 and 71.41).

Keywords: subclinical mastitis; comparison; prevalence; cattle; camels



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1. Introduction

Mastitis is considered the most frequent and harmful pathology [1,2]; its subclinical form causes many biological changes in milk, such as affecting the somatic cell content [3], salts (Na Cl) content [4] and the acidity of the milk [5], which requires indirect screening tests, such as the California Mastitis Test (CMT) [5], Electrical Conductivity (EC) of milk and pH indicator papers [6]. These tests are frequently used by researchers and some veterinarians who testify to the existence of inflammation in udders. The results of this method make it possible to obtain the rate of prevalence and study the impact of different risk factors on this rate to help in prevention. Our objective in this study was to study the prevalence of this disease and compare the results obtained from dairy cattle with those obtained from camels. In the end, our objective was to study the effect of age, teat position and the month of lactation on the prevalence rate.

2. Material & Methods

2.1. Farms and Animals

For cows, samples were taken from regions of Mila, Guelma and Constantine. For camels [6], samples were taken from farms in Biskra and Ouargla. The distribution of animals according to age and the month of lactation is as follows: For camels, we have 40 primipareous, 12 in middle age and 5 camels over 17 years old. For the stage of lactation, there were 14 camels in the beginning and, at the end of lactation, 43 camels. For cattle, according to age, there were 18 primiparous, 79 in middle age and 7 old cows; for the stage of lactation, 74 were in the early stage of lactation and 30 cattle were at the end of lactation.

2.2. CMT

A test was applied. Its principle was based on the use of Teepol, which leads to cells bursting and the precipitation of their DNA; the technique is based on the mixture of milk (2 mL) and 2 mL of reagent in cups on an appropriate test plate, which is then stirred and read according to the degree of coagulation. In terms of reading, gelation corresponds to a positive test. The absence of gelation is negative; if there is a gel that disappears after a few seconds, it is considered suspicious.

2.3. Prevalence

The prevalence value is calculated in the concordance with the equation.
 Prevalence = incidence × duration [5].

2.4. Statistical Analysis

For statistical analysis, we have used Excel software and the Chi 2 test, with Excel Logical for calculating meaning and drawing graphics and the Chi 2 test for comparing between different meanings.

3. Results & Discussion

In Table 1, we can find results of different prevalences of disease in function of stage of lactation, age and udders position.

Table 1. Results of study on camels and cows.

	Stage of Lactation		Age			Udders	
	Beginning	End	Primiparous	Middle	Old	Post	Ant
Camelins (%) [6]	14 (25)	43 (75)	40 (70)	12 (21)	5 (9)	71 (33)	80 (37)
Bovins (%)	74 (71)	30 (29)	18 (17)	79 (76)	7 (17)	34 (16)	13 (6)

Post: Posterior; Ant: Anterior.

The prevalence rate (CMT > 1) is around 45% (47/104) for the cattle studied and 15% (62/416) for their quarters. In addition, the study carried out in camels yielded prevalence rates of 67% (38/57) for camels and 35% (76/216) for teats, respectively, i.e., an increase of 130% for teats and 50% for animals; Ref. [5] reports that camels are as susceptible to mastitis as other species. The differences between rates were not significant at $p < 0.05$, neither for animals nor quarters (Chi 2= 53.24 and 71.41) (Figure 1).

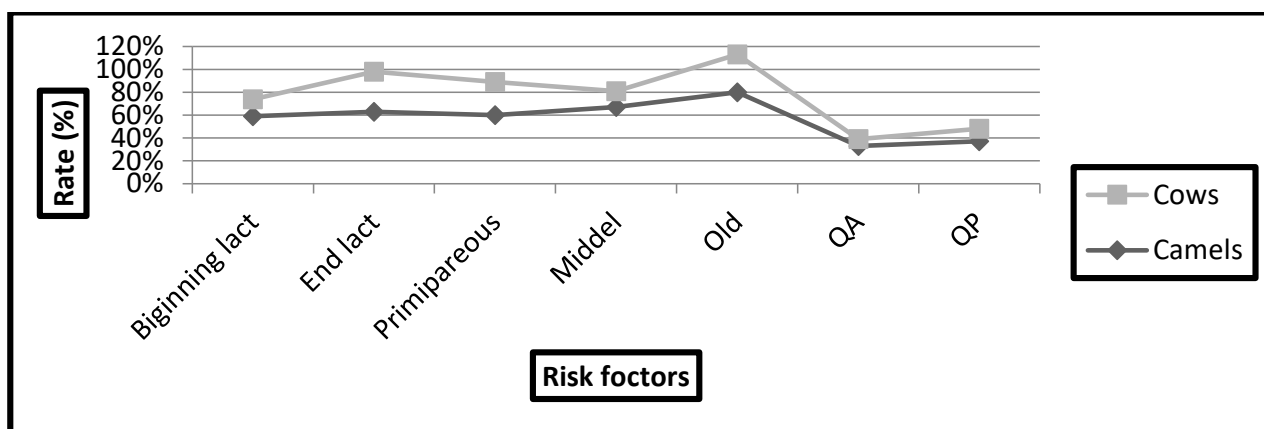


Figure 1. Effects of different risk factors on the rate of subclinical mastitis according to the species. lact = lactation; AQ = Anteriors Quarters; PQ = Posteriors Quarters.

Our study emphasizes the impact of the last stage of lactation compared to the first (35% vs. 15%), which is in agreement with the other study (63% vs. 59%); on the other

hand [7,8] evoke the effect of the first months. The effect of the posterior position of the cattle's teats compared to the anterior (11% vs. 6%) is in agreement with [9] but is in opposition to the study on camels (33% for hind vs. 37% for fronts). Regarding the effect of age, as mentioned by the study on camels (60%, 67% and 80%), depended on the classification of the age, even for [9], in opposition to our study, wherein we obtained fluctuating frequencies (29%, 14% and 33%).

4. Conclusions

This study confirms that Subclinical Mastitis is an existing disease in our country. The disease affects bovines and camels with varying rates and is impacted by different risk factors (age, teats position and stage of lactation). Furthermore, it requires early detection methods for screening and further study of the risk factors for prevention.

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