Prevalence and Study of the Bovine Sarcocystis Species in the Slaughterhouses of Řouiba (Algiers)

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Abstract
In this present study, experimental infestations of the definitive hosts of cattle Sarcocystis were realized to identify the species existing in our regions. For that purpose, 200 g of a mixture of oesophagi and diaphragms infested by cysts of Sarcocystis were administered to 7 dogs, 2 cats and 2 Magot monkeys. Only dogs excreted oocysts and sporocysts of Sarcocystis cruzii, although cysts with thick wall were present in broyats.

Keywords: Sarcocystis sp; Cattle; Infestation; Dogs; Cats; Magot monkeys; Oesophagi; Diaphragm

Introduction
The sarcosporidiosis is underestimated in Algeria. Although sporadic cases of human sarcosporidiosis were detected in hospitals, it is not a disease with compulsory statement [1]. In our slaughterhouses, our veterinarian colleagues during the inspection of the bovine carcasses, have not noticed cystic or myositis. Seen the absence of data concerning this parasitosis, we had introduced a preliminary study concerning this parasitosis, we had introduced a preliminary study on the prevalency of the bovis sarcocystosis and identification of the Sarcocystis species [2]; the histology revealed strong prevalency of cysts with thin wall (S. cruzii) (85.8%), the rest corresponding to cysts with thick wall (25%) (S. hominis and/or S. hirsuta). The aim of our present study is to determine the exact importance of the zoonosis Sarcocystis species, by the realization of experimental infestations of the definitive hosts of the Sarcocystis cattle.

Materials and Methods
Protocol of infestation of the definitive hosts
The samples of oesophagi and diaphragms used for the infestation were analyzed by the method of enzymatic digestion for searching bradyzoites then histology for the searching both types of cysts. The samples retained for our study (N° 101, 110, 111, 120, 121, 130, 161, and 170).

Samples constituted by a mixture of 200 g of 10 infected oesophagi and 10 infected diaphragms were used for the infestation of animals. All the infected animals were isolated in individual goals and distributed in 3 groups. The 1st group of 7 dogs (Canis familiaris), localized in different pound of Algiers having received before and during the experiment, a diet with milk bread, and several times, some cheese; the 2nd group of 2 domestic cats (Felis catus), living in the Veterinary graduate school of Algiers, with a diet with water, milk, cheese and with dry catfood and the 3rd group of 2 Magot monkeys (Macaca sylvana) property of the Zoological park of Algiers (Ben Aknoun), receiving a diet constituted by water, fruits and by fresh vegetables.

The choice of the monkeys savings is bound to the absence of human volunteers or the other definitive hosts for the S. hominis (the monkey rhesus (Macaca mulatta), the monkey cynamolgus (Macaca fascicularis) [3]. These last ones received 150 g from raw meat mixed with ½ bananas, ½ apples, some sugar and the aroma of banana. The whole is crushed well, homogenized and preserved at the cool. However, the monkeys ate only approximately 50 g of the prepared mixture, whereas dogs and cats ingested 200 g of a mixture of pieces of oesophagi and diaphragm. We were not able to finalize the experiment with all the dogs because 3 of them had been shot down by the agents of the canine pound.

Search for sporocysts of Sarcocystis in the saddles of dogs, for cats and for the monkeys after infestation
All the animals underwent 2 controls coprologiques fortnight preceding their infestation to make sure that these last ones are not infested by Sarcocystis. After their infestation, 3 takings of saddles, in the 9th, 14th and 22nd day post-infestations were realized.

Saddles were analyzed according to the method of qualitative concentration of flotation by using a dense solution of NaCl (d: 1.12). The positive samples are translated by the presence of ookysts and/or sporocysts of Sarcocystis. The size of sporocysts (Length × Width) is measured by means of an eye micrometer.

Results
On the totality of the infested animals, only dogs excreted oocysts of Sarcocystis in their saddles. The optical microscopic examination revealed the presence of sporulated oocysts containing 2 sporocysts surrounded by a slender oocystale wall, of a length of 16.25–20 µm and a Width of 13.75–17.5 µm. Concerning cats as well as savings, although cysts with thick wall were present in samples intended for their infestations, the results obtained by their infestation showed negative (2). In most part of the cases, we observed sporocysts free of Sarcocystis cruzii of shape ellipsode containing a residual body and sporozoites 4. Sporocysts measured on average (15×10 µm, n 20) (Length × Width) (Figure 1).

Discussion
The elimination of sporulated oocysts or sporocysts of Sarcocystis by dogs in saddles, confirm the results of the histological analysis for

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with the food for animals. Generally, we need enough raised number of cysts to be able to establish a rather strong contagious dose, which can produce sporocysts in detectable numbers [7]. The second hypothesis is the age of the cysts which is a factor to be considered [7]. Indeed, the younger cysts or immature containing metacystes are not infectants for the definitive host. The specificity of the species of Sarcocystis to their definitive hosts is confirmed in our study, by the absence of excretion of oocystes of S. cruzi in the saddles of cats and in the saddles of savings. The last hypothesis which would explain the negative results to cats and monkeys savings would be of in the low staff used for our infestations (number 2). Indeed, seen the average of cysts with very low thick wall, and to avoid the individual reactions, it would have been necessary to infest a largest number (minimum 10) with cats and with monkeys to increase our chances to make a success of our infestations.

Conclusion

In Algeria, the existence of three species of Sarcocystis affecting the cattle, the S. cruzi, S. hirsuta and S. hominis was already reported by Nedjari [7] in a serological study. In our present study, the experimental transmission of Sarcocystis only succeeded with dogs, so confirming, and the presence of S. cruzi in the infested bovine samples [8]. To determine prevalency of each of the other species, we intend to make a study of cysts with thick wall in electronic microscopy and to infest a more important staff of cats and monkeys [1].

References