

VACCINATION FOR PREVENTION OF PARATUBERCULOSIS: INFLUENCE ON MILK YIELD IN DAIRY SHEEP

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ABSTRACT

In this research, lactation of both, before and after vaccination against paratuberculosis has been evaluated on an Assaf breed sheep farm with moderate prevalence of the disease. The procedure was conducted in 2009 and part of 2010 and included all animals born in 2006 and 2007, of which 50% from each year were randomly vaccinated to have batches of “vaccinated” and “control” animals from both years. In the vaccinated batch from 2007, there was a notable increase in milk production after vaccination, and more discrete improvement was observed in the vaccinated batch from 2006.

Key words.

Prevalence, paratuberculosis, milk yield, vaccination, sheep.

INTRODUCTION

Even when the prevalence of paratuberculosis is moderate in milk producing flocks, it exerts a highly negative influence on production. This phenomenon has been attributed to the nutritional alteration that the disease causes, especially in those animals with production that depend critically on diet. One of the most affected factors in this regard is that of milk production, especially in high production sheep breeds. Vaccination represents a valuable resource for controlling this disease, and evaluation of the effects of its use in milk production is highly recommended to make decisions in affected flocks.

MATERIAL AND METHODS

This experiment consisted in serological evaluation of the presence of paratuberculosis in two groups of sheep that were part of the same flock of Assaf breed sheep. One group of animals was born in 2006 and the other in 2007, neither of which had been previously vaccinated against paratuberculosis. To do this, blood was randomly drawn from 25 individuals from 2006 and another 25 from 2007 and their sera were subjected to a specific ELISA to determine their antibodies against the disease.

Subsequently, 50% of animals of each group was vaccinated randomly, and the unvaccinated batches remained as controls. Before starting the investigation, the data pertaining to the lactations of all the sheep immediately prior to it were available; subsequent lactations were recorded to make a relevant comparison.

RESULTS

The serological data showed that 4% of the samples were positive for paratuberculosis; this fact, as well as the fact that a discrete number of losses is attributable to this disease in the flock, led us to describe prevalence of the disease in the flock as moderate.

In both vaccinated batches, from 2006 and 2007, increases in average milk production were observed when comparing their lactations from 2008 to 2009. In the batch of animals from 2007, this increase is greater. In the batches that were left unvaccinated, the evolution of milk production does not maintain the same pattern; there is a decrease in the unvaccinated batch from 2006 and an increase in the 2007 batch, which however, is not comparable to that obtained in the vaccinated batch from the same year.

Table 1 shows the production results from the 580 lactations that were recorded for this research.

Table 1. Production results according to year and vaccination (n=580 lactations)

LACTATIONS	Born in 2006		Born in 2007	
	unvaccinated	vaccinated	unvaccinated	vaccinated
Lact 2008/Lact 2009	- 20.12 litres	+ 28.58 litres	+ 29.09 litres	+ 65 litres
Lactation from 2008 (geometric mean of litres per ewe)	219.57 litres	174.39 litres	169.28 litres	221.49 litres
Lactation del 2009 (geometric mean of litres per ewe)	199.45 litres	202.97 litres	198.37 litres	286.49 litres

DISCUSSION

Although the ravages caused by paratuberculosis in animals displaying clinical signs are well known, the possible damage it causes in animals that are infected but asymptomatic is not as well known. The results of this experiment seem to point to the fact that it can also cause less evident damage in animals that, due to the environment in which they are reared, have acquired the infection by *M. avium paratuberculosis* without unleashing the entire progression of symptoms and lesions that characterise this disease.

It is striking that the results in the vaccinated batch of animals born in 2007 exhibit an increase in production greater than the equivalent batch from 2006. This phenomenon seems to be related to greater susceptibility to clinical development of paratuberculosis of animals that are in their second year of life, a phenomenon that decreases when the sheep are in their third year of life.

CONCLUSIONS

According to the results, it is productive to vaccinate adult dairy sheep against paratuberculosis, even in situations in which the prevalence of the disease in the flock is not alarming. The results from this experiment demonstrate, once again, that there are no undesirable effects that affect milk production of the animals that receive vaccination in adulthood, although the verification of this end was not part of this investigation.

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