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# A RABBIT BREEDING TECHNOLOGY TO CONTROL COCCIDIOSIS*

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## Abstract

A system of movable cages which, when they are displaced on the pasture, can break the biological cycle of coccidia was studied.

Weaned rabbits, 35 days old, where set in groups of seven in movable cages. These had a surface of 1 sqm and were provided of feed and water ad libitum. The rabbits of one cage received robenidine 66 ppm; two more groups received the same feed without robenidine. The cages, disposed on the turf, were displaced every day. The trial was repeated in spring and late autumn.

The oocysts were counted in the feces the first day of the trial, then after two and four weeks, always the very day they were excreted, to test the effect of cage displacement. The oocysts were also counted each three days in the place were they were excreted to test the effect of permanence on the ground.

After four weeks the rabbits not receiving robenidine eliminated 55% less oocysts then at beginning, showing the effectiveness of the system which can be very useful in rural areas of developing countries where the use of coccidiostats is nearly impossible.

The number of oocysts decreased quickly in the feces on the ground; after one week they were reduced to 44% of the original amount, and after one month only few oocysts were detectable.

Key words: rabbit, coccidiosis, technology.

## Introduction

Coccidiosis is controlled, in rabbit breedings, through a continuous administration of coccidiostats (Coudert et al., 1976; Varga, 1982; Coudert and Provot, 1988; Peeters et al., 1988; Peeters, 1992).

In rural breedings, this pharmacological control of the disease is very difficult and uncommon, mainly in Developing Countries where animals are fed with grass and by-products.

A model of movable cage for fattening rabbits (De Lazzer and Finzi, 1992; Finzi et al, 1992) has shown to permit the use of feeds free from active drugs. This is because the continuous displacement of the cage to new grazing areas avoids the animals to ingest infective oocysts (Amici et al., 1992; Finzi et al, 1993; Finzi, 1994) because they need generally more than two days to sporulate (Kheysin, 1972).

The use of movable cages could solve the problem when it is impossible or uneconomical to use medicated feeds. A field trial was then planned in order to test the effectiveness of the breeding system.

## Material and methods

Weaned rabbits, 35 days of age, were provided by a farm where a balanced pelleted feed, containing robenidine 66 ppm, was used.

The animals were randomly housed, in groups of seven, in three grazing movable cages. These ones measured m 1.30x0.82x0.36 and were displaced every day to the proximate grazing area.

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The rabbit were provided of a pelleted feed and water ad libitum; the feed administered in one cage was medicated with robenidine 66 ppm and in the other two was without robenidine. Growth and feed consumption were recorded. The trial was repeated in spring and in autumn.

The samples of feces were collected at the beginning of the trial, then after two and four weeks. This was done the same day of emission to test the effectiveness of the cage displacement.

The samples were also collected for 30 days in the place were they were excreted the first day. This was each two days, until the fourth day, then every three days, to test the decrease of oocysts in the ground as an effect of time passed by.

The count of oocysts was done by the McMaster counting technique (Sinkovics et al., 1984).

## Results and discussion

The effect of cage displacement is described in figure 1. In the second week the number of oocysts, at the moment of the excretion, decreased from $16.1 \times 10^3$/g of feces to $13.0 \times 10^3$ (-19%) in the animals which received robenidine, and from $15.5 \times 10^3$ to $10.3 \times 10^3$ (-33%) when the rabbits received a feed without the coccidiostat. The initial figures are similar to the ones observed by Cringoli et al. (1986). In the fourth week the oocysts/g were $11.6 \times 10^3$ (-28%) in the groups with robenidine and they were less then the half ($6.9 \times 10^3$; -55%) in the not treated groups. The quick decrease of oocyst concentration shows that the breeding in movable cages is very effective in reducing the infection by coccidia. The difference observed in the feces of treated in comparison to non treated animals at the end of the trial is difficult to be explained; it is possible that the lower elimination of oocysts when robenidine is administered (Peeters et al., 1988) could justify the different trends.

The permanence of oocysts in the feces, when they remained on the ground, is important to determine the lag of time after which the turf can be grazed again. In figure 2 it is possible to observe the decrease of oocysts which have not yet disintegrated. The decrease was very quick and significant ($P < 0.01$) since the fourth day.

When the oocysts were examined at microscope, the ones in the feces of animals receiving robenidine showed a wall much thicker than in the no robenidine groups. The thicker walls made it difficult to distinguish the sporozoites inside the infective oocysts. For this reason the sporulated oocysts were calculated only for treatments not receiving robenidine (fig.2).

At the beginning all the animals came from a breeding where medicated feed was administered. Very soon a percent of sporulated oocysts appeared in the feces (21% after 2 days, 49% after 4 days). After one week practically 100% of oocysts was infective in the feces of untreated rabbits. At this time the percent of oocysts had decreased in the untreated groups from 15000 to 6600/g. After one month the feces were practically free of oocysts (9/g as a mean).

Differently from Gallazzi (1977) no seasonal effect was detected. This indicates that, to be sure, two months from last grazing are sufficient to make the pasture utilizable again, at least in the studied seasons. A killing effect of ultraviolet irradiation has been demonstrated (Litwer, 1935), thus this prudential time could be shortened in summer and in tropical countries.

Inside the rabbit breedings oocysts can survive also for years (Peeters et al., 1988), thus the proposed technology can be very useful, both because it reduces the level of the infection in the animals, and because the effect of solar radiation inactivates rather quickly the oocysts on the ground. When the use of coccidiostats is practically impossible, as in rural breedings of developing countries, rabbits can utilise the same area many times in the year, mainly in tropical areas, where solar radiation is very strong.

Live weight at 80 days was kg 2.11 and 2.25 respectively in the treatments without and with robenidine, the difference ($P < 0.05$) indicates a positive effect of robenidine (daily gain g 35 VS 32; feed conversion 3.4 VS 3.7). Peeters et al. (1988) observed a daily weight gain ranging from 14 to 20 grams when no robenidine was administered in

comparison to 37-39 g/day in animals receiving robenidine. In our case the better results obtained could be attributed to the movable cage technology.

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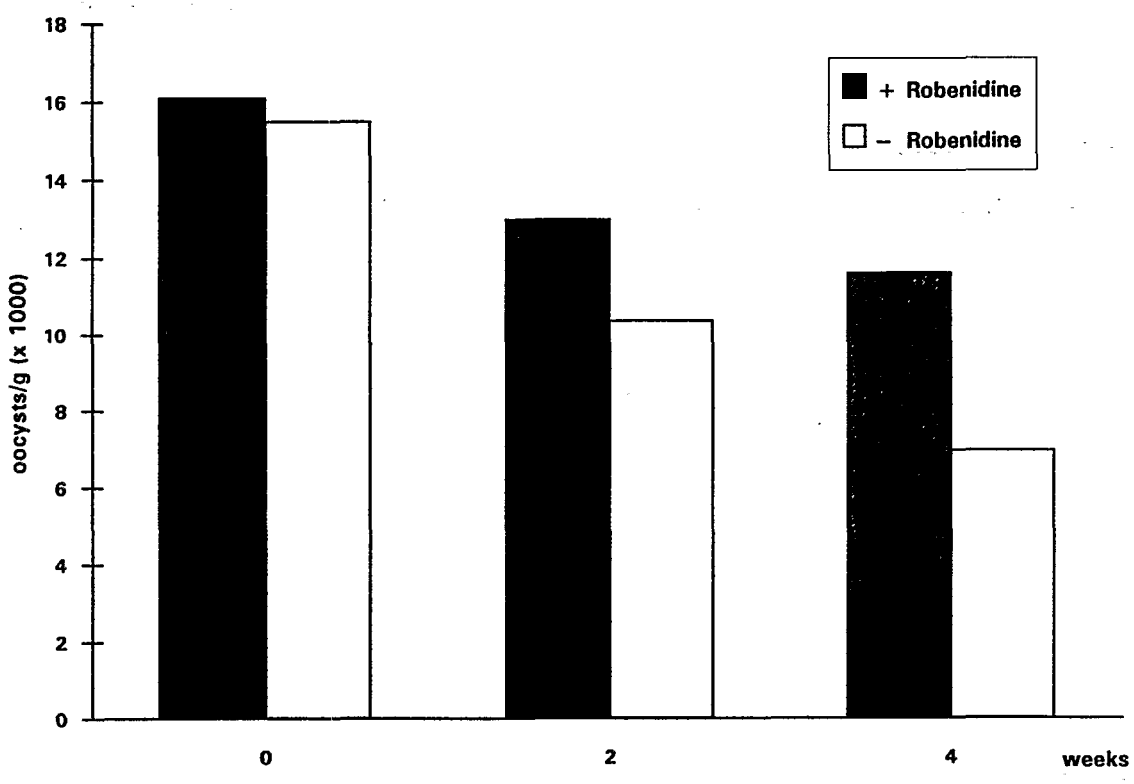


Fig. 1 - Effect of daily cage displacement.

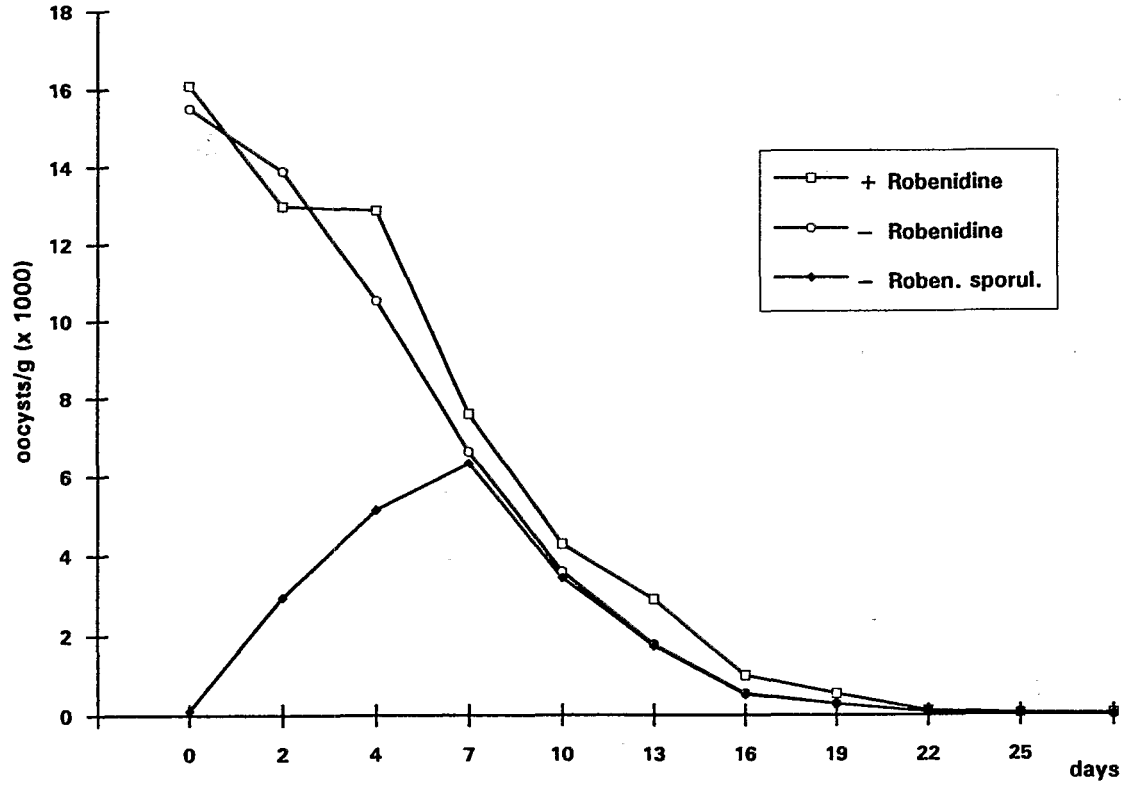


Fig. 2 - Effect of permanence of oocysts in the ground at beginning of the trial and after 4 weeks of cage displacements.