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EFFICACY OF ESSENTIAL OILS ON RABBIT MANGE

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Some of the currently known active principles against rabbit mange are certainly effective, but they have a more or less pronounced toxicity to humans and animals and, recently, some of them showed phenomena of drug resistance.

The aim of the study is to test the efficacy of some essential oils against the rabbit mange, caused by *Psoroptes equi* var. *cunicoli* (Acarina: Psoroptidae), to formulate some compounds without toxicity for topical and environmental treatments.

A) Laboratory tests with *Tyrophagus putrescentiae*. This mite, provided by the Urania Center of Research (Perugia, Italy), was used as a model for his resistance to biocides. N°20 essential oils were tested in the Sec. of Parasitology, Dept. of Veterinary Medicine of Perugia (Italy). For the test of toxicity, the mites were introduced on Petri Dish and sprayed with essential oils diluted with grapeseed oil (1:1, 1:2, 1:3) through a manual nebulizer from the distance of about 20 cm. For detecting the state of vitality, the mites were kept under observation, with the stereomicroscope, for a day (every 30' for 3 h and, subsequently, after 6 h and 24 h). Each test was repeated three times for each dilution, using N°10 mites for replication; for the control only grapeseed oil was used. The results of this phase were analyzed in order to detect the two essential oils more effective to use in subsequent trials.

B) Field tests: these tests were carried out in N°3 rabbit farms in South-Central Italy, on animals suffering from auricular mange, using essential oils of *Mentha piperita* and *Thymus vulgaris*. Three compounds were tested: two different liquid formulations with essential oils in liquid and microencapsulated form and with grapeseed oil as excipient (one to be used topically on animals and one for environmental treatment by spraying) and one formulation in solid form for topical use, whose active principle was present only in the microencapsulated form and with talcum powder as excipient.

-Liquid form for topical use: rabbits were treated by introduction of 2 ml of solution in the ear with a disposable pipette. This formulation had an efficacy of 100%, as in the first 24 h post-treatment all adult mites, nymphs and larvae died; devitalization of eggs occurred within 48 h post-treatment. The feedback parasitological examination lasted 8-12 days, while a progressive clinical recovery was observed.

-Liquid form for spraying: the samples, collected by scotch-test on the backs of the animals, revealed a reduction of about 60% of mites; this shows that the periodic use of environmental treatment by nebulization may help to decrease the population of mites in the farm, reducing the risk of new infestations.

-Solid form for topical use: the results were good, but there was not a complete cure. The lesions almost entirely disappeared, but not all mites died deeply. This led to a recurrence of the mange after about 20 days.

Our tests confirm the efficacy of some natural products made from essential oils for the treatment of rabbit mange by *P. equi* var. *cunicoli* [1, 2]. The use of these compounds in livestock farming, as in the rabbit farms, would certainly lead to significant benefits, especially because, due to the non-toxicity, they can be used for environmental sanitization carried out in the presence of animals.

1. Fichi G et al. 2007. *Exp Parasitol*, 115:168-172

2. Perrucci S et al. 1995. *J Nat Prod*, 8:1261-1264