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In vitro and in vivo effect of Citrus limon essential oil against sarcoptic mange in rabbits

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Abstract

The effect of lemon oil (*Citrus limon*) on *Sarcoptes scabiei* var. *cuniculi* was evaluated in vitro and in vivo. The mite samples were collected from naturally infected rabbits. The lemon oil was prepared in six concentrations by dilution with distilled water (2.5, 5, 10, 20, 50, and 100 %). In vitro application was done in five replicates for each concentration in petri dishes in the laboratory. The treated mites were observed at 1, 12, and 24 h post application (PA) for lemon oil effect. In addition, oxidative stress profile was evaluated for the treated mite. Dependent on in vitro results, 20 % lemon oil was used in vivo trial. Twenty-four naturally infected rabbits were divided into three groups of eight: 20 % lemon oil, deltamethrin, and untreated control. The infected parts of rabbits were treated topically once a week for four successive weeks. In vitro application results showed that lemon oil 10 and 20 % diluted in water caused mortality to 100 % of mites after 24 h PA. The oxidative stress profile revealed that mites treated with 20 % lemon oil had significantly ($P < 0.05$) higher hydrogen peroxide and malondialdehyde when compared with mites treated with deltamethrin or distilled water. In vivo application of 20 % lemon oil on naturally infected rabbits showed complete recovery from clinical signs, absence of mite in microscopic examination from the second week of treatment. In addition, productive performance was significantly better than infected untreated group. Also, the treated tissue showed stoppage of scale formation and hair growth faster than deltamethrin-treated rabbits. Consequently, lemon oil has remarkable miticidal activity in vitro and in vivo applications.

Keywords: Citrus lemon; In vitro; In vivo; Oxidative profile; Rabbits; *Sarcoptes scabiei* var. *cuniculi*.

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