RESUMO SIMPLES - ECTOPARASITOS: SISTEMÁTICA, EPIDEMIOLOGIA E CONTROLE

ACTIVITY OF THE INSECT GROWTH REGULATOR PYRIPROXYFEN ON FEMALE ADULTS OF AMBLYOMMA SCULPTUM IN EXPERIMENTALLY INFESTED RABBITS (ORYCTOLAGUS CUNICULUS)

Clara Rodrigues Dutra (clararodriguesdutra@gmail.com)

Ramon Da Luz Bezerra (ramon.bezerraa@gmail.com)

Fernanda Da Silva Freitas Campos (fernandasfcampos@gmail.com)

Ester Oliozi Marré (esterom17@outlook.com)

Eduardo Fellipe Melo Santos Soares (edu.fellipe@live.com)

Joao Pedro Pimentel Nepomuceno Rosa (joaopedronepomuceno28@gmail.com)

Rayane Monteiro (monteirorayane918@gmail.com)

Iury Tauã De Souza Vieira (iurytau@outlook.com)

Marcos Paulo Gonzaga Nascimento Nazareth (marcospgnn@gmail.com)

Fabio Scott (scott.fabio@gmail.com)

The tick Amblyomma sculptum play a central epidemiological role in the transmission of Rickettsia rickettsii, the agent of Brazilian spotted fever in Brazil. This ixodid is also known as star tick and it's primary hosts includes Horses (Equus caballus), capybaras (Hydrochoerus hydrochaeris) and tapirs (Tapirus terrestris), but duo to it's low parasitic specificity it can be found in several

mammals including humans, reinforcing the need for new control alternatives that minimize the selection pressure associated with conventional acaricides. Pyriproxyfen (PPF), a juvenile hormone analog widely used against insects preventing metamorphosis, has shown potential activity on tick reproduction, but its efficacy against A. sculptum remains insufficiently explored. This study evaluated the topical effect of different PPF doses on engorged females and egg viability of A. sculptum using New Zealand rabbits experimentally infested as an animal model. The study was performed under protocol number 1058090222, submitted and approved by the Ethics Committee on Animal Use (CEUA) of the Veterinary Institute (IV) of the Federal Rural University of Rio de Janeiro (UFRRJ). The work was carried out in the Laboratory of Experimental Chemotherapy in Veterinary Parasitology (LQEPV). Twenty-four rabbits weighing 3.5–6 kg, free of prior tick exposure, were allocated into four groups (n=6): a control group treated only with vehicle (isopropyl alcohol) and three treated groups receiving PPF at 100 mg/kg (0.42%), 150 mg/kg (0.63%), or 200 mg/kg (0.84%). Spray treatments were applied on day 0, and on day +1 animals were prepared with dorsal trichotomy for attachment of calico bags with Unna's paste and subsequent infestation with 10 male and 10 female just-molted unfed ticks of A. sculptum. Naturally detached engorged females were collected between days +8 and +17, weighed, and incubated for oviposition. Females after oviposition and egg masses were later weighed after 25 days, and hatchability was determined following an additional 30-day incubation period. Data were analyzed using one-way ANOVA (p=0.05). No significant difference was observed in the mean weight of engorged female between the control group and the treated groups (p = 0.054): the values obtained were 0.7169g for the CG, 0.614g for G1, 0.586g for G2, and 0.570g for G3. Likewise, no significant difference was detected in the mean weight of females after oviposition between the control and treated groups (p = 0.989): the values obtained were 0.215g for the CG, 0.236g for G1, 0.227g for G2, and 0.226g for G3. However, PPF significantly reduced the weight of egg masses compared with the control group (p<0,001), and eggs from treated groups frequently exhibited darker amber coloration. A pronounced reduction in hatchability was observed in all PPF-treated groups (5.27%, 6.74%, and 2.32%, respectively) compared with the control (78.07%). Statistical analysis confirmed a significant difference between the control and treated groups (p<0.001), although no significant difference was detected among the treated groups themselves. No adverse clinical effects were observed in treated animals. These findings indicate that topical PPF substantially disrupts reproductive parameters of A.

sculptum, particularly egg production and viability, highlighting its potential as an adjunct strategy in integrated tick management. Further studies employing higher PPF concentrations are warranted to determine whether reproductive suppression can be enhanced and to support its possible incorporation into veterinary tick-control programs.

Palavras-chave: ectoparasites; oviposition; hatchability; insect growth regulator.