

In vitro Evaluation of the Acaricidal Activity of Limoneno against Non-fed Larvae of *Rhipicephalus microplus* †

Martin Daniele ^{1,2,3}, Francisco Reynaldi ⁴, Daniel Citroni ⁵, J Errecalde ^{2,3}, Martin Dade ^{1,2,3,*}

¹ Universidad Nacional de Río Negro, Sede Alto Valle y Valle Medio. Escuela de Veterinaria y Producción Agroindustrial, Choele Choel, Río Negro 8360, Argentina; mrdaniele@unrn.edu.ar (M.D.) mmdade@unrn.edu.ar (M.D.)

² Cátedra de Farmacología Especial y Toxicología, Facultad de Ciencias Veterinarias, Universidad Nacional de La Plata, 60 y 118s/n, CC 296, La Plata, 1900, Argentina

³ Cátedra de Farmacología Básica, Facultad de Ciencias Médicas de la Universidad Nacional de La Plata, Laboratorio de Artrópodos y Vectores (LabArVec), 60 y 120 s/ n, La Plata 1900, Argentina; martindade26@hotmail.com (M.D.)

⁴ CCT CONICET La Plata, LAVIR (Laboratorio de Virología), Facultad de Veterinaria, Universidad Nacional de La Plata, 60 y 118s/n, La Plata 1900, Argentina

⁵ Campo Experimental Camba Punta – SENASA, Corrientes, Argentina

* Correspondence: martindaniele@gmail.com (M.D.); martindade26@hotmail.com (M.D.);

† Presented at The Sixth International Meeting of Pharmaceutical Sciences (RICiFa), November 10-12, 2021, Córdoba, Argentina

Received: 26.04.2022; Revised: 4.05.2022; Accepted: 6.05.2022; Published: 8.05.2022

Abstract: *Rhipicephalus microplus* is one of the most widely distributed tick species. This tick is considered the most economically important ectoparasite of livestock in tropical and subtropical parts of the world, where it is endemic being also an important vector of pathogens. Due to the populations of ticks resistant to the synthetic acaricides currently used, it is necessary to search for new compounds with different mechanisms of action. This is why the objective of the present work was to investigate the acaricidal activity of the monoterpene limonene. The ticks were obtained from the experimental field Camba Punta, SENASA. The lethal activity of the monoterpene was evaluated using the technique of the larval packet test. The statistical analysis was carried out using the Polo Plus program, which allowed us to obtain the lethal concentration 50% (LC50). The CL50% for limonene in *R. microplus* larvae was 0.51 µg / mL. In conclusion, the limonene tested in this work has been shown to display lethal activity against larvae of the tick *R. microplus*, suggesting that the monoterpene limonene could be a new natural alternative for tick control.

Keywords: *Rhipicephalus microplus*; limoneno; ectoparasite; tick control.

© 2022 by the authors. This article is an open-access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

Funding

This research received no external funding.

Acknowledgments

We thank Mrs. S.H. Rogers for her careful manuscript correction and editing.

Conflicts of Interest

The authors declare no conflict of interest.