establish PK/PD indices to improve evidence-based antiparasitic strategies.

Development of a nanocarrier pharmaceutical formulation containing metronidazole for the topical treatment of bovine trichomoniasis

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Trichomonosis is a venereal disease of cattle caused by the flagellated protozoan *Tritrichomonas fetus*. In males, the protozoan is found in the mucosa of the preputial cavity, and in older animals, the increase in the size of the preputial crypts creates a microenvironment conducive to the survival of the pathogen. Thus, dose-dependent antiprotozoals, such as metronidazole, may have their systemic use compromised. The use of topically administered mucoadhesive nanoparticles is a promising strategy to promote increased intracrypt drug retention. Chitosan nanoparticles cross-linked with sodium tripolyphosphate (TPP) were chosen because they interact easily with the metronidazole molecule and have high mucoadhesion. Pre-formulation stoichiometric studies were carried out (3:1 chitosan:TPP); quality control of chitosan by acid-base titration (95% deacetylation) and solubility tests (1% acetic acid). Tests were carried out with different means of incorporating metronidazole in the formation of the nanostructure, to find the conditions of maximum encapsulation efficiency and stability. The scope of an already validated analytical method for the quantification of metronidazole by UPLC-MS/MS was expanded, following the ICH guide. The hydrodynamic characterization was carried out using dynamic light scattering (DLS) to measure the size and Zeta potential of the particle with metronidazole (191.4 nm and 39 mV). The maximum encapsulation efficiency was 74.2% (evaluated by filtration in a molecular cutting centrifuge tube and subsequently quantified by chromatography). Stability tests were carried out, noting around 10% degradation of the active ingredient in the nanostructured formulation after 21 days of synthesis. We can conclude that the metronidazole molecule is stable in aqueous media after encapsulation and shows promise for evaluation in the treatment of bovine trichomoniasis, promoting the rational use of antimicrobials.

Determination of doramectin protocols using computational modeling for the treatment of *Rhipicephalus microplus* in cattle.

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The control of ectoparasites in cattle farming is essential to ensure productivity and animal health. Macrocyclic lactones, such as doramectin, are widely used due to their low toxicity, broad spectrum of action, and biological activity at low concentrations. However, optimizing do-