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Anthelmintic Activity of Synthetic Amino Alcohols on Eggs and Larvae of the Gastrointestinal Nematode *Teladorsagia Circumcincta*

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Helminthiases caused by nematodes are one of the most common parasitic diseases in the world and mainly affect developing countries. The objective in this study is to test the potential anthelmintic activity of synthetic molecules against different phases of the gastrointestinal nematode *Teladorsagia circumcincta*, which was used as model in this study. A total of 21 amino alcohols were tested in *Teladorsagia circumcincta* eggs using the in vitro Egg Hatch Assay (EHA) at a single concentration of 50 µM. After an incubating period of 48 hours, the ovicidal and larvicidal activity were calculated by the percentage of hatched eggs inhibited and dead larvae observed, respectively. In those molecules that showed ovicidal activities higher than 85%, the concentration required to inhibit the 50% of the activity (IC$_{50}$) and the cytotoxicity were calculated to determine the selective index (SI). To discard another possible mechanism of action (laryngeal paralysis), Larval Feeding Inhibition Assay (LFIA) was performed with those molecules with high larvicidal activity (>85%). From all the molecules tested, 8 showed high larvicidal activities in a range between 85 and 100%, and 3 of them also showed an egg hatching inhibition higher than 80%. The IC$_{50}$ of the 8 molecules tested ranged between 2 and 10 µM; the most effective molecule had a SI of 20.93 and 10.11 when the cytotoxicity was tested in mammalian Vero cells and in mouse splenocytes (BALB/c strain). LFIA showed that one molecule inhibited the larvae food ingestion, showing a similar mechanism of action as imidazothiazoles and macrocyclic lactones.

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