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combatting anthelmintic resistance in ruminants

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Oral Communication

Nematodicidal Drug Combinations: a Valid Strategy for Parasite Control in Cattle?

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In an attempt to manage anthelmintic resistance, nematodicidal drug combinations could be considered as a valid strategy to delay resistance development, contributing to optimize control of resistant parasite populations. The rationale behind using combinations is based on the fact that individual worms may have a lower degree of resistance to a multiple component formulation (each chemical with a different mode of action/resistance) compared to that observed when a single anthelmintic molecule is used. A pharmaco-parasitological assessment of different nematodicidal combinations was performed at different cattle commercial farms in Argentina. Ivermectin(IVM)-ricobendazole(RBZ), IVM-levamisole(LEV) and RBZ-LEV combinations were assessed. The observed pharmacokinetic data demonstrated that the co-administration of two anthelmintics did not modify the plasma pharmacokinetic behaviour of either drug in cattle. The combinations were the only treatments achieving 100% clinical efficacy, even when a highly IVM-resistant *Haemonchus* spp. isolate was present. Overall, after combined treatments a therapeutic additive effect was observed under all susceptible/resistance scenarios. However, the efficacy of IVM-RBZ against nematodes resistant to IVM and RBZ was greater than an additive effect. Achieving the highest possible efficacy is a powerful argument for using combinations; since fewer resistant parasites will survive treatment, the diluting effect with susceptible unselected parasites in refugia will be greater, and thus the development of resistance may be slowed. Additionally, the weight gain was significantly higher for the combination IVM-RBZ in calves naturally infected with resistant nematodes. Overall, anthelmintic combinations could be useful to control gastrointestinal nematodes in cattle farms. However, any treatment decision should be based on a previous diagnosis and rational use of combinations according to the situation of each individual farm.