The Effectiveness of Anthelminthics in Finches

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Introduction

Tapeworms (cestodes) and gizzard worms (*Acuaria* spp.) in finches are not uncommon in Australian aviaries. Failure to eradicate worm infestation is usually attributed to poor insect control, the use of compost heaps in aviaries, the presence of moist, planted or earthen-floored aviaries and the method of drug administration, for example, medicating finches through the drinking water rather than individually by crop gavage. Rarely is the effectiveness of the drug itself questioned. Many aviculturists regularly worm their birds with anthelminthics which are "extra label" or not recommended for worms commonly found in their particular bird species. Dose rates recommended for a particular anthelminthic in a given species can vary greatly. Claims as to the effectiveness of anthelminthics in finches have been, to date, based on anecdotal rather than scientific data. The purpose of this study was therefore to evaluate the effectiveness of some commonly used anthelminthics against tapeworm and gizzard worm in finches.

Material and Methods

Finches that were naturally infested with tapeworm, gizzard worm or both were used in this study. They were housed in commercially available flat-topped, wire-floored cages (34 x 44 x 52 cm) and fed standard finch seed mix and water only. The finch species infested with tapeworm included the orange-breasted waxbill (*Amandava subflava*), diamond firetail finch (*Emblema guttata*), red-headed parrot finch (*Erythrura psittacea*), Saint Helena waxbill (*Estrilda astrild*), fire finch (*Lagonosticta senegala*), bengalese finch (*Lonchura domestica*), crimson finch (*Neochmia phaeton*), star finch (*Neochmia ruficauda*), double barred finch (*Peophila bichenovii*), black throated grassfinch (*Peophila cincta*), zebra finch (*Peophila guttata*) and the melba finch (*Pytilia melba*). The finch species infested with gizzard worm included the painted firetail finch (*Emblema picta*), longtailed grassfinch (*Peophila acuticauda*), zebra finch, Saint Helena waxbill, diamond firetail finch, red-headed parrot finch, black throated grassfinch, fire finch, Melba finch, Bengalese finch and the star finch.

Each bird was weighed using a mini electronic scale[2] prior to dosing by crop gavage. Groups of 10 finches were given either praziquantel[3], fenbendazole[4], oxfendazole[5] or netobimin[6] for tapeworm and levamisole[3], oxfendazole or netobimin for gizzard worm. Praziquantel was given at 0.1 mL/finch once daily for 1 or 3 days, fenbendazole at 0.1 mL/finch once daily for 7 days, oxfendazole at 0.05 mL/finch once daily for 3 days, levamisole at 0.1 mL/finch once daily for 3 days and netobimin at 0.2 mL/finch as a 5 mg/mL solution, once daily, in divided portions 1 to 2 hours apart for 10 days. The 5 mg/mL solution of netobimin was a saturated solution made up by dissolving 1 level spoon (4 g of Hapavet) to 28 mL of water. The reason for dividing the 0.2 mL dose into equal portions was because in the smaller finches (less than 10g body weight) volumes greater than 0.1 mL are likely to be regurgitated after crop gavage.

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[2] Cenweight, Cenvet

[3] Avitrol-Plus, Batch B4994, 10 mg/mL levamisole and 2 mg/mL praziquantel, Mavlab Qld.

[4] Panacur 2.5, 25 mg/mL, Hoescht Agrivet

[5] Systamex Concentrated Drench, 90.6 g/L, Coopers Animal Health

[6] Hapavet 35 mg/g, Vetafarm NSW

On the 6th and 7th day after the last anthelminthic dose, the finches were individually caged and the droppings, passed over 2 to 4 hours, were collected. Several wet-mount faecal preparations were made and microscopically examined for the presence of parasitic eggs or segments. If eggs or segments were seen on either day, the results were recorded as positive for worms. Birds which died during the dosing period or within 4 days after dosing were necropsied but excluded from the study.

Results and discussion

All birds tolerated the treatment protocol and no signs of toxicity were observed. Eleven birds, which were clinically sick prior to dosing, died during the study and 5 of these were excluded because they died during the dosing period or within 4 days of dosing. Faecal analysis findings in these 11 birds (5 negative, 6 positive) correlated with necropsy findings. The dose rates used in this study were much higher than thoses recommended in aviculture. Although some anthelminthics, such as praziquantel, are relatively nontoxic compared to others, such as levamisole, these higher dose rates are not recommended by the author as no dosage titration studies have been carried out. Although an anthelminthic used in this study may not have eliminated all the worms within 7 days after treatment it may have reduced the total number present in individual birds and had the birds been retested some weeks later the results may have been more favourable. Since live birds in this study were not available for necropsy, faecal negative birds after treatment may have been false negatives due to egg suppression so the efficacy reported for some of the anthelminthics may be lower.

Praziquantel was the most effective anticestodal agent tested (Table 1). A single oral dose of 22.7 mg/kg appeared to be 100 percent effective. Whether lower doses, such as the recommended 6 to 10 mg/kg dose, are equally effective still needs to be determined in finches. The benzimidazoles (fenbendazole and oxfendazole) were less effective, despite the higher than recommended dose rates used. The probenzimidazole, netobimin (NTB) was found to be ineffective. The benzimidazoles and probenzimidazoles mode of action in parasites is to interrupt mitochondrial microtubular function by binding to tubulin. Since NTB does not bind to parasite tubulin, its anthelmintic activity depends on its biotransformation to albendazole (ABZ) metabolites such as albendazole sulphoxide (ABZSO). Whether such a transformation can occur in finches is unknown. The most effective antinematodal agent tested against gizzard worm in this study appears to be levamisole (Table 2). Levamisole belongs to the imidazothiazole group of anthelminthics and their mode of action is to act as ganglionic stimulants causing spastic paralysis in nematodes.

Acknowledgments

This work is part of a larger collaborative study with Dr. Tom H. Cribb (Parasitology Department, The University of Queensland) and was funded by The Queensland Finch Society Inc. and a donation from Mr and Mrs GA and G Thouard of Ellen Grove, Queensland.

References

Barragry TB (1994). Veterinary Drug Therapy. Lea & Febiger, Philadelphia p. 82

Delatour P, Cure MC, Benoit E & Garnier F (1986). Netobimin (Totabin-SCH): preliminary investigations on metabolism and pharmacology. *J. Vet. Pharmacol. Therap*. 9: 230-234.

Lanusse CE, Gascon L & Prichard RK (1992). Methimazole-mediated modulation of netobimin biotransformation in sheep: a pharmacokinetic assessment. *J. Vet. Pharmacol. Therap.* 15: 267-274.

Lanusse CE, Trudeau C, Ranjan S & Prichard RK (1991). Pharmacokinetic profiles of netobimin metabolites after oral administration of zwitterion and trisamine formulations of netobimin to cattle. *J. Vet. Pharmacol. Therap.* 14: 101-108.

Rew RS & Fetterer RH (1986). Mode of action of antinematodal drugs. In, Chemotherapy of parasitic diseases. Eds Campbell WC & Rew RS, Plenum Press, New York, p321-337.

Table 1

Results in finches with tapeworm given various anthelminthics by crop gavage.

Drug Name	**Daily Dose used (mg/Kg)**	**Max. Recommended daily dose (mg/Kg)**	**No. negative/No. tested**
Praziquantel	15.2 for 3 days 22.7 once	10	10/10 10/10
Fenbendazole	227 for 7 days	100 for 5 days	6/10
Oxfendazole	390 for 3 days	40	4/10
Netobimin	143 for 10 days* 121 for 10 days#	20 for 7 days	0/10

*: 2 birds
#: 8 birds

Table 2

Results in finches with gizzard worm given various anthelminthics by crop gavage.

Drug Name	**Daily Dose used (mg/kg)**	**Max recommended daily dose (mg/kg)**	**No. negative/No. tested**
Levamisole	78 for 3 days	40 repeat 10 days	7/10
Netobimin	138 for 10 days* 103 for 10 days#	20 for 7 days	0/10
Oxfendazole	378 for 3 days	40	2/5

* 4 birds
# 6 birds