

Ivermectin in the Treatment of Respiratory Mites

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A pair of East African Superb Starlings *Spreo superbus*, in apparently good condition, was obtained during mild weather at the beginning of November 1994 and put straight outside. Two weeks later, night temperatures fell off sharply and the *Spreos* were seen to sneeze occasionally. The birds were brought inside, where the cock rapidly got worse. Dry sneezing, in the absence of mucous and other respiratory or ocular implications, is the classic symptom of lung mites. This may proceed to include a loud whistling, wheeze or a dry cough.

The connection between the onset of cold weather and the appearance or recurrence of symptoms was obvious. This also happened previously with a symptomless Gouldian Finch which was kept outside in an unheated greenhouse, built against the house window. A few cold nights and the bird's respiratory whistling could be heard indoors. This finch successfully responded to dichlorvos.¹

The *Spreo* pair was put under an 18.6% dichlorvos pest strip for two periods of a week, with a week in between. This made no difference whatsoever. A tracheal swab from the cock confirmed that he did indeed have mites (which were not speciated). The hen continued to sneeze only very occasionally.

Some ivermectin was obtained but no specific information was available for its use in the treatment of birds – only the dose for cattle was given in the package insert, amounting to 0.2 mg/kg. In this study, all doses are given in the customary mg/kg and refer to the actual amount of ivermectin, not the liquid, which is 1% strength. The odd numbers are a result of even amounts of liquid being administered. Note that some articles mention ivermectin in micrograms and this may be misread, with resultant

confusion.

The male *Spreo*, weighing 70g, was given various doses, from 0.14 up to 1.0/ mg/kg, with no effect. Then six doses of 1.8 mg/kg were administered over 33 days, also with no effect.

All the above doses were given in mealworms, because handling the birds brought on increased and quite severe respiratory distress. The innards of mealworms are under high pressure and injecting them successfully takes a little practice. Inject the larva slowly over several seconds, then withdraw the needle very slowly, waiting to make sure none of the dose comes back out. Alternatively, the tail can be nicked off the mealworm. This depressurizes it but it also shrinks, leaving less room for a dose.

It is easier to dose the birds directly and if using this route, be careful to get well past the epiglottis. Also avoid touching the tongue for, like a lot of medicines, ivermectin tastes foul! For this reason, birds will not eat mealworms that have leaked and may remain suspicious of them for half a day or more.

Things were at the serious stage with the *Spreos*, for now the cock was sneezing between two and five times in succession, about every three minutes. The hen was still not so bad, but had increased her rate from the original.

Belatedly, some House Sparrows and European Starlings were caught for dosing experiments – something that should have been done in the first place. All of these were dosed directly down the throat, using a 1 cc syringe.

The two starlings were given 21.5 mg/kg each. This did not slow them down in the least and they took off at high speed two days later.

The sparrows (all males), weighing between 26 and 28g, were given doses ranging from 13.17 - 76.92 mg/kg. This latter figure is 384.6 times the recom-

mended dose for cattle! A hen sparrow was left untreated to monitor the feeding, etc.

The bird on the lowest dose was visibly unaffected, but scarcely ate. Twenty-four hours later, it was given a further 15.25 mg/kg. In three hours, it looked very ill. It sat fluffed up, either on the perch or on the floor, usually with its eyes shut and shivering occasionally. Ivermectin does not clear the system within a day, the half-life being 22-28 hours in humans (though no doubt less in birds) so the symptoms were due to the accumulation of about 20-22 mg/kg. This sparrow hardly ate at all during the two days of dosing but on the third day it recovered completely – flying against the bars and eating well. Along with the hen, this bird was kept for a month then released, still in good condition.

The other sparrows, on single doses of from 38.5 - 76.92 mg/kg, all showed the above symptoms, except that one did not fluff up. None appeared to be any better or worse than the others, in spite of the dose range. Like the first bird, they were all fine one day after treatment and took off rapidly when released in three days.

The *Spreos* and some other birds (which arrived from China *via* California and were all sneezing) were now treated with more confidence.

After the earlier months of futile treatment with increasing doses, the male *Spreo*'s symptoms now disappeared the day following a single administration of 5 mg/kg. The hen, which had become much worse by this time, did not respond to this dose and needed 7.2 mg/kg, after which she became symptomless overnight. It was by now the end of March, and the pair went on to have three nests of chicks in the summer. At the end of the year, they were still symptom-free.

Of the rest, a 17g Siberian Blue Robin *Erithacus cyane* with a slight infection, judging from the sporadic and light sneezing, was eventually (in March) given 14.7 mg/kg. Like the cock *Spreo*, it had not responded to many lesser doses given over a four month period. Although symptoms now abated, it recommenced sneezing lightly and infrequently at a friend's place about three weeks later (exact time not recorded).

A hen Scarlet Minivet *Pericrocotus flammeus*, with several problems, was neither affected nor cured by 11.7 mg/kg. Its sneezing abated when given

15.6 mg/kg but it became ill for a day, just like the sparrows, sitting with its eyes shut and throwing up its last meal. This bird died from other causes, soon after.

In the meantime, a letter from the manufacturer (Merck) confirmed that no 'official' information was available on the use of the product for birds and because of this, they would make no recommendations for Ivermectin (their trade name for ivermectin) in this regard. In spite of this, ivermectin is used to treat respiratory mites in veterinary surgeries around the country, often by the 'spot' method. The absorption of this chemical is about the same, whether given by intramuscular, intraperitoneal or subcutaneous injection, oral dosing or even by skin spot treatment. So in cases where it is not of dire necessity, injecting birds is too traumatic and quite reprehensible.

Merck also supplied information from a book² that quotes some papers on mites – an interesting one being that of Grimm and Centurier, 1986, who found that the airsac mite *Cytodites nudus* was only knocked out (in pheasants) by 50 mg/kg.

Some reasonable conclusions can be drawn from this very small trial, the most worrying one being that there is a very resistant strain (to both ivermectin and dichlorvos) of respiratory mites going about. It is puzzling that birds from divergent sources should have such resistant mites, but these could have been picked up in a government quarantine station – a typical bureaucratic waste of time and money – or in a dealer's premises.

Apparent cures can not be assumed by the immediate cessation of symptoms. The mites can be suppressed by sub-clinical doses of medication and symptoms ameliorated temporarily, so a follow up of at least a month is prudent.

The breeding success of birds is not affected by 7.2 mg/kg of ivermectin and probably not by any sublethal dose (neither was breeding affected by dichlorvos).

The point at which small birds (16-33g) become visibly affected by ivermectin is ±15 mg/kg. Although higher doses make the bird ill, recovery is complete within one to two days.

Ivermectin has a very wide safety margin for birds. Even a massive 385 times the cattle dose is not lethal. ➔

1: Gibson, L., Avic. Mag (U.K.) 84:1 1978.

2: Cambell, Wm. C., Ivermectin and Abamectin, Merck.

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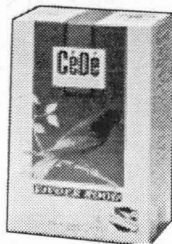
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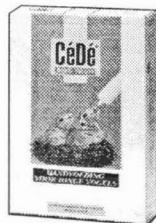
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