

TREATMENT OF PARASITIC INFESTATIONS IN REPTILES

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Ticks and mites both suck blood from the host reptile, this causes irritation, anaemia in the case of heavy infestations and the possible transmission of septicaemic bacterial disease (Camin 1948).

Ticks are usually only found on freshly imported reptiles, they are large, easily seen and relatively immobile. If they are manually removed care must be taken to remove the whole tick and not to leave the mouthparts *in situ*, where they can act as a nidus of infection. The tick's mouthparts can be caused to loosen by applying liquid paraffin or a parasitocidal wash to the abdomen before any removal attempt. The site of attachment is cleansed with a suitable disinfectant such as Pevidene (Berk Pharmaceuticals).

Mites are often a cause for greater concern with their ability to travel up to 15 feet per day facilitating their spread through a reptile collection. The life history of the *Ophionyssus* sp. of reptile mite has been dealt with by Palumbo (1971). Whilst bathing snakes in a parasitocidal wash such as 0.2% Alugan (Hoechst U.K. Ltd) is effective, the treatment of choice is dichlorvos in the form of a Vapona (Shellstar Consumer Products U.K.) strip. The directions on the packet must be followed and an appropriate sized portion of the strip placed in the vivarium, ensuring that the reptile can not come into direct contact with it. Jackson (1977) recommends a treatment schedule of 3 to 4 days although Rosenfeld (1975) found periods of up to 3 weeks proved necessary to effectively control mites in certain species of lizards. Whilst Rosenfeld (1975) described no toxic side-effects in the lizards so treated, Marcus (1977) described the symptoms of ascending paralysis in the anole (*Anolis carolinensis*) after only 4 days of therapy. The paralysis proved reversible on the removal of the vapona strip. Infested vivaria should be vacated, scrubbed clean, all furnishings sterilised or burned and a Vapona suspended in it for at least 10 to 14 days to kill any larval mites which subsequently hatch from the resistant eggs. Mite infestations should be taken seriously and careful inspection of all newly acquired stock for mites, during the quarantine period should be undertaken.

Roundworm infestations are common in reptiles, but the number of worm eggs in a faecal sample is probably unrelated to the degree of infestation, at least in tortoises (Claussen and Forstner 1981). The majority of roundworm infestations rarely appear to be pathogenic, even when large numbers of worms are present (Cooper 1974), although Ippen (1971) reported a 40% mortality rate due to parasites in a series of 1100 post-mortem examinations on reptiles. Complications are rare and usually show themselves as symptoms of gut impaction (Kane, Corwin and Beaver 1976). Tapeworms have been implicated as a cause of weight loss and death in small snakes apparently feeding normally (Jackson and Muller 1976) with both Kutzer and Grunberg (1965) and Frank and Loos-Frank (1977) reporting deaths in snakes caused by tapeworms. The main danger with internal parasites is the build up of infective larvae in the captive reptile's environment leading to self reinfestation and a rapid build up of parasite numbers. Faecal worm egg counts can be undertaken regularly to give a guide to the correct timing of anthelmintic administration, in many ways it is preferable to demonstrate the presence of a parasite before treatment. Techniques of faecal examination are described by Needham (1981). The treatment of internal parasites is relatively easy and most modern anthelmintics are considered relatively non-toxic. Piperazine salts should be avoided even in healthy reptiles because the therapeutic index is low and these salts have a low degree of efficacy (Jackson 1974 1976). All the drugs should be administered suspended in water via a stomach tube. The technique of stomach tubing snakes is described by Jackson (1974) and tortoises by Holt, Cooper and Needham (1979). Special care must be taken when thiabendazole is used in the treatment of roundworms because this drug is hygroscopic. If it is mixed with insufficient water prior to dosing, it will absorb water from the patient's tissues and could exacerbate the condition of a dehydrated patient (Holt, 1981).

Anthelmintics for use against roundworms in reptiles

<i>Levamisole</i> ("Nilverm" or "Nemecide", ICI Ltd). (Zwart and Ham 1972; Frank 1976)	50 mg/kg by injection. 200 mg/kg orally.
<i>Thiabendazole</i> ("Equizole", Merk Sharp Ltd). (Frye 1973; Bush 1974)	100 to 400 mg/kg orally.
<i>Fenbendazole</i> ("Panacur", Hoeschst UK Ltd). (Tiefenbach 1977; Holt and Lawrence 1982)	50 mg/kg by stomach tube. 100 mg/kg if mixed with food.
<i>Mebendazole</i> ("Telmin KH", Crown Chemicals o Ltd). (Claussen and Forstner 1981)	100 to 200 mg/kg every five days, on four occasions. 400 mg/kg, twice at ten daily interval.
<i>Albendazole</i> ("Valbazen", Smithkline) (Lawrence and Jackson 1983)	50 mg/kg orally.

Anthelmintics for use against tapeworms in reptiles.

<i>Bunamide hydrochloride</i> ("Scoloban", The Wellcome Foundation Ltd) (Jackson 1974)	25 mg/kg orally.
<i>Dichlorophen</i> ("Dicestal", May and Baker) (Jackson 1974)	200 mg/kg orally.
<i>Niclosamide</i> ("Yomesan", Bayer UK Ltd). (Jackson 1974)	150 mg/kg orally.
<i>Praziquantel</i> ("Droncit", Bayer UK Ltd).	3.5 mg/kg by S/C injection.

When fendendazole and mebendazole have been used to treat mixed round and tapeworm infestations they both appear to be effective against mammalian tapeworms, but their use for the treatment of reptilian tapeworms must be speculative (Tiefenbach 1977; Holt and Lawrence 1982).

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