THE ZEBRA FOUNDATION GRANT REPORT

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A COPROLOGICAL SURVEY OF INTESTINAL PARASITES AND LOW DOSE PANACUR TRIAL IN A GROUP OF CAPTIVE BRED AFRICAN LIONS

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Background

Knowledge of lion parasites stems mainly from a small number of zoo lion studies (mainly in the West) and a limited amount of research on wild populations. Recent studies have discovered both coccidian and helminth parasites not previously known to infect lions (Bjork et al. 2000, Agrawal & Chauhan 2001). Samples sizes for studies of captive bred lions are understandably small, generally varying from 1 - 12 individuals.

At present there is much conflicting data on effective anthelmintic dosages for large felids. Some of the dosages suggested require large volumes of liquid, tablets or powders (which are especially difficult to administer to wild animals).

We, therefore, planned to collect and analyse faecal samples from a captive bred population of over 100 lions kept at The Lion Park, Johannesburg, South Africa - a sample size not previously studied in captivity. Once pre-worming faecal egg counts were known, we proposed to dose the population with Fenbendazole & use post-worming faecal egg counts to determine the efficacy of the dose used.

The research

We visited South Africa during September, 2003 where we spent three weeks at The Lion Park. At the time of our visit there were 103 lions with 6 born during out visit. We decided to use a representative sample of the population.

Sample collection

Samples were collected from the selected enclosures over a period of three consecutive days. Due to the fact that the lions were only fed 2-3 days per week, defaecation was not daily, but a representative sample of faeces from each lion was obtained. Those lions under 4 months of age (not fully weaned) provided samples daily. For those lions less than 1 year old, we braved the enclosures to collect the samples ourselves. For those lions over a year, we were lucky enough to have the assistance of a ranger who would leap out of the Landrover (mace spray in-hand!) to collect samples whilst we kept watch from the safety of the vehicle.

In total, samples were taken from 25 adults (>18 mnths) and 22 young lions (2 weeks - 12 months). We also had the opportunity to take samples from 2 young cheetah (2 weeks), 1 jaguar (4 months), 2 tigers (6 months), 3 leopards (10 - 18 months). Samples were stored in a refrigerator for no longer than 48 hours before being analysed at Onderstepoort Vet School, University of Pretoria.

Faecal analysis

A total of 102 pre-worming samples were taken from the 55 large felids involved in the study. From each sample an egg count was obtained using a McMaster assay. The process of performing each assay was prolonged due to the increased health and safety requirements at the University in order to prevent any possibility of transmission of *Echinococcus* (a zoonotic tapeworm) to us or any other research staff.

The results of the faecal egg counts revealed an almost universal infection with *Toxascaris leonino*. Some Toxascaris counts were over 3000 eggs/gm. Those animals under 12 months of age had a much higher incidence of infection possibly due to the close proximity of the enclosures and transmission by fomites. Those animals over 12 months of age resided within an almost closed population and also, may have developed immunity to the species, therefore yielding lower counts. A very low level of infection of *Ancyclostoma coninum* was observed in the two young cheetah cubs. The faecal samples from 8 lion cubs aged 6-8 weeks were infected with large numbers of Coccidial eggs, thought to be *Isospora felis* (with some samples reaching >15,000 eggs/gm). A small number of *Isospora* eggs were found in samples from older cubs but at levels that are not clinically significant.

All those animals sampled were wormed using Panacur (Intervet) at a dose of 10mg/kg for 3 consecutive days except the two cheetahs which we continued for a total of 5 days due to the potentially harmful *Ancylostoma* (hookworm) infection. We used liquid (10% solution - 0.1m1/kg) for those animals 6 months or younger and tablets for older animals. The liquid was administered via a syringe for all cubs, except for the tigers where it was mixed in with a liquid food to avoid loss of fingers - or even a leg! Those over 6 months were wormed using Panacur Favourites for dogs and were either dosed by hand (no mean feat!) or in small chunks of horse meat. In order to dose those adult lions residing in the closed population (in one of the park's camps) they were individually dosed in the mornings with 2 tablets in a small chunk of horse meat as they were released from their over-night enclosure. [Those animals with Coccidiosis were treated by the vet with Sulphadiazine for 10 days].

We left an interval of seven days before collection of post-worming samples to ensure any parasites were fully voided. The samples were then collected and analysed as mentioned previously. A total of 75 post-worming samples were taken. Analysis of these samples showed a dramatic reduction of egg counts to zero in all cases except one 6 month cub (which bit Emma and so didn't get a dose that day!). The coccidiosis treatment used for the 8 cubs infected with *Isospora felis* was also successful and reduced the counts to zero.

Additional experiences

During the seven-day interval between collecting and analysing the pre- and post-worming samples, we travelled to Kruger National Park to observe lions and other species in their natural habitat (we even saw a leopard in a tree eating its kill!!!). We attended a night game-drive during which we were lucky enough see lion, hippo, elephant, hyena, civet and several gazelle species. We also spent a day at Swadini Reptile Park where we had the opportunity to attend a Rangers Course on Snake Identification and Handling.

During out time at the Lion Park, we were invited to spend the afternoon with the park manager and a game-capture vet whilst they darted Blesbok for transport to a game-reserve. We were able to assist with the physical restraint and handling of the sedated animals whilst they were loaded into the transport vehicle.

Also whilst at the Lion Park, "Cole" one of the black leopards was bitten on his right antebrachium, which had developed into a large abscess extending down to his paw. He was non-weightbearing following the development of the abscess. He was loaded into a small transport crate and taken to the vets where he was heavily sedated. We then assisted with lancing and draining the abscess and also with taking radiographs of the limb to ensure no bone involvement.

Acknowledgements

We would like to thank you for this financial assistance, without which we could not have undertaken our research. We feel as though we have taken a lot away from our experiences in South Africa - including a few scars!!!