

1 Summary

Background: For more than ten years, the population of black-handed spider monkeys of the Basel Zoo in Switzerland has suffered from chronic pinworm infection. These parasites could not be controlled by repeated conventional hygiene measures and deworming approaches. The main aim of this study was to develop a more efficient control strategy, combining a new medication option and an optimized hygienic sanitation by mechanical and chemical decontamination of the environment. The second objective was to identify the pinworm species: the present work provided the unique opportunity to genetically analyze the pinworms found in the Basel Zoo spider monkeys.

Methods: Detailed coprologies (zinc-chloride flotation) were carried out in order to get more information about the extensity and the intensity of infection and about the species of the involved parasite(s). We administered three times 0.2 mg/kg of moxidectin per os to each spider monkey with an interval of 30 days between treatments, including all individuals except lactating babies. Our treatment hypothesis was based on the fact that moxidectin is lactogenically passed to the lactating off-spring, and that these would thus also get an appropriate deworming medication. Following each deworming step, we cleaned the cages with a high pressure steam cleaner (Kärcher®) and we subsequently added a disinfection with Neopredisan®. We carried out control coprologies during the whole duration of this work in Basel.

Results: The results showed that pinworms were still present, although we noted a marked decrease in the number of eggs in post-treatment and post-disinfection samples. Thanks to the collaborative investigations carried out by Robin Gasser and Anson V. Koehler (Melbourne University), *Trypanoxyuris atelis* could be reliably identified as infecting species.

Conclusion: This work demonstrated the efficiency of Moxidectin against *Trypanoxyuris atelis* and its tolerability in spider monkeys, as well as the adequacy of Neopredisan® as a choice of disinfectant. The presence of eggs in the feces despite our control method can probably be explained by an incomplete disinfection practice, which was an unavoidable consequence of both limited budget and logistics. For reaching an eradication status of the problem, we suggest that the control measures should be repeated several more times.

Keywords: Pinworms, *Trypanoxyuris atelis*, spider monkeys, moxidectine.