

BAYTRIL USE IN MARMOSETS AND COTTON TOP TAMARINDS AT NATIONAL ZOO AND AQUARIUM CANBERRA ACT

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THE PROBLEM

Marmoset Wasting Disease (MWD) is a common problem of Marmosets and Cotton Top Tamarinds and in Canberra we were establishing colonies of both at the National Zoo and Aquarium. The first introductions to new enclosures resulted in animals showing gradual ill thrift and wasting. Blood tests were normal. (Blood was collected after isoflurane induction following capture)

THE SOLUTION

Animals continued to deteriorate and in the absence of other viable treatment Baytril Injectable was started by injecting meal worms and feeding sid. The first female adult was found dead in her enclosure overnight. On post mortem the body organs had small hard cheesy abscesses throughout. Histology could not identify the organism. Several other deaths followed.

The cause of MWD is controversial however in our case stress leading to a compromised immune system was indicated to be a contributing factor. Clearly when abscessation is present even enrofloxacin is ineffective. The shipment protocol changed. To start, oral meal worms injected with Baytril were fed for 2 weeks prior to shipping and continuing for 6 weeks post arrival. No further deaths occurred despite many relocations.

Suggested causes of MWD are given below from:

<http://www.nagonline.net/Proceedings/NAG1995/Wasting%20Marmoset%20Syndrome.pdf>

THE CAUSE

In a study of 23 cases of MWD the following causes were identified as possibilities. Infectious causes (viral – 4/23; bacterial -7/23, including three specific references to *Campylobacter* sp.; parasitic- 3/23) were suggested, as were food allergies (3/23), insufficient available light spectrum (2/23), inappropriate diet presentation (1/23), acinar pancreatic atrophy (1/23), autoimmune disease (1/23), and anorexia (1/23).

The involvement of a multi-factorial situation rules out a simple cause. However, in our case, supported by several post mortems and blood tests, we are now confident in shipping these small animals.

WHY BAYTRIL?

The use of Baytril Injectable in meal worms came about after initially using jelly beans which resulted in 1 case of diabetes mellitus. The advantage of meal worms is that they are always available, readily tolerated and easy to get the animals hooked on.

NOTES ON ANTIMICROBIAL THERAPY: MARMOSET WASTING DISEASE



SELECTION OF THE ANTIMICROBIAL:

Enrofloxacin (Baytril) is a concentration dependent antimicrobial with excellent activity against many of the pathogens seen in infections in exotic species such as the Marmoset. Efficacy depends on the **level achieved** above the Minimum Inhibitory Concentration (MIC) of the pathogen, not the **time** above the MIC.

DOSE SELECTION:

Knowledge of bioavailability and biotransformation of therapeutic agents is essential for successful treatment. Unfortunately these parameters, for almost all drugs used in the treatment of exotic species, are unknown. This is a distinct disadvantage for the practitioner when administering drug therapy. Published studies show the standard dose rate of 5mg/kg to be safe and effective however it's not unusual to see higher doses from 10 to 30mg/kg utilised.

ROUTE OF ADMINISTRATION:

Oral administration of tablet formulations to exotic species is often not an option so alternative methods are required. In this case, by injecting Baytril into a food source that is readily accepted, efficient dosing is achieved.

Note: If Baytril Injection is to be mixed in a flavoured liquid for dosing, take care not to use anything too acidic such as citrus juices. Sugar based cordials are preferable.

DURATION OF THERAPY:

The use of Baytril as prophylaxis rather than for the treatment of an existing disease state is both unusual and highly original. The results certainly justify this form of therapy and the treatment period of 8 weeks indicates the antibiotic is well tolerated in these animals.

BAYTRIL:

- Has excellent tissue penetration in skin, reaching therapeutic levels as early as 3 hours after administration
- Is highly lipophilic, allowing it to pass through fibrous tissue, scar tissue, pus and inflammatory debris to reach the site of infection
- Accumulates in white blood cells which means:
 - It's directly and selectively carried to the infection site
 - Tissue penetration is enhanced

The most commonly used class of drugs in small mammals is the fluoroquinolones. Baytril is safe, can be administered orally and is effective against the majority of pathogens seen in these species.

