CLINICAL TRIAL ON THE EFFICACY OF MOXIDECTIN ORAL GEL FORMULATION ON DONKEYS NATURALLY INFECTED BY CYATHOSTOMINAE

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Work type: **Original Research**
Topic: **Internal Medicine**

Purpose of the work. *Donkeys and horses share several parasites including the small strongyles, Cyathostominae. Moxidectin (MOX), a compound of macrocyclic lactones, has a wide range of ecto and endoparasitic activity in many species. For horses, MOX is available as oral gel formulation that provides excellent and long-lasting efficacy against nematodes such as large and small strongyles. There is a paucity of data available on the efficacy of anthelmintics used in donkeys (Veneziano et al., 2011). Therapeutics, such as antiparasitic compounds, are often administered to donkeys on the basis of dosage and intervals recommended for horses, because very few drugs have donkey-specific label indications (Grosenbaugh et al., 2011). The objective of the present study was to evaluate the field efficacy and Egg Reappearance Period (ERP) of MOX oral gel up to 84 days at horse dose against natural infection of Cyathostominae in donkeys.*

Materials and used methods. *The trial was conducted on a donkey farm in northern Italy. Faecal examinations (individual Faecal Egg Counts and pooled coprocolture) performed before the beginning of the study showed individual counts >150 eggs per gram (EPG) and high prevalence of intestinal Cyathostominae (Cyathostomum, Poteriostomum spp.) in all studied donkeys. Twenty-nine donkeys, 141-379 body weight (BW), were selected on the basis of positive faecal egg counts (FEC). The study donkeys were treated using MOX, administered per os at the manufacturer's recommended horse dose of 0.4mg/kg BW. The weight was estimated using a mobile weighing platforms. FECs were performed on each donkey before the start of the trial (Day 0), at Days 14, 28, 56 and 84 after treatment. FECs were determined by McMaster technique (sensitivity 10 EPG). On each sampling day, faecal samples were incubated at 27 °C for 7-10 days for larval identification. Third stage larvae were identified using the keys proposed by MAFF (1986). To determine the efficacy of MOX against intestinal strongyles following the American Association of Equine Practitioners (AAEP) Parasite Control Guidelines (Nielsen et al., 2013) at each faecal sampling time, arithmetic mean of EPG was calculated and the percent efficacy (%) of each animal was calculated in terms of FEC Reduction (FECR) at the different days according to the formula: ([FECPRE - FECPOST]/ FECPRE) x 100. In agreement with AAEP Guidelines cutoff values suggested for interpreting results of FECRT in horses treated with MOX were: efficacy>98%; suspected resistance 95-98%; resistant<95%. Regarding the ERP: the week post-treatment when the percent reduction in FEC decreases below a cutoff value of 90% efficacy.*

Outcomes. *The animals were observed throughout the study. Clinically no adverse reaction was observed in any of the donkeys treated orally with MOX. The arithmetic mean of strongyle egg counts on day 0 was 553.8 EPG (min 150-max 1430) in the studied group. After the treatment only one*

donkey was shedding eggs by day 14. At day 28 two donkeys were positive and by 56 day seven donkeys were positive to strongyle eggs. At day 84 twenty-three donkeys (79,3%) were positive with a mean value of 147.6 EPG. However, FECR remained high throughout the study period. The percentage reductions in FEC were 99.7% at the day 14, 99.5% at the day 28, 97,7% at the day 56 and 73.3% on day 84 post treatment. The MOX treatment in donkeys was efficient (>98% efficacy) until Day 28. A shortened ERP value was observed. In all studied donkeys, faecal cultures performed at day 0 revealed the presence of Cyathostomum and Poteriostomum spp. Coprocoltures post treatment revealed the presence of few larvae of Cyathostomum.

Conclusions. *This trial demonstrates that MOX oral gel formulation at the manufacturer's recommended horse dose was effective and safety for the treatment of intestinal strongyles on donkeys, however with a shorter ERP. Nielsen et al. (2014) reported that a shortening of the ERP could be the first indication of developing anthelmintic resistance in horses. Grosenbaugh et al. (2011) reported that donkeys have a greater capacity to metabolize certain drugs compared with horses; thus, higher dosage or shorter intervals could be required for maintaining effective drug concentrations. The shorter ERP observed in the studied donkeys could be associated with a sub-therapeutic level of MOX. Therefore, further research should be carried out to determine the optimal dosage for antiparasitic compounds in donkeys.*

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