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SOCIETÀ ITALIANA di PARASSITOLOGIA

**SOCIETÀ ITALIANA
DI PARASSITOLOGIA**

XXVII Congresso Nazionale



Alghero 26-29 giugno 2012



Dipartimento di Medicina Veterinaria
Università degli Studi di Sassari



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Treatment of natural infestation of the chewing louse (*Wernerckiella equi*) on donkeys using alphacypermethrin pour-on.

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AIM: Donkeys and horses may be infested with two species of louse, the chewing louse, *Wernerckiella equi* and the sucking louse *Haematopinus asini*. *W. equi* feeds on the most superficial layers of the skin and louse infestation tends to be seen in unkempt animals and often leads to hyperkeratosis, alopecia, anorexia, restlessness and loss of body condition (Wright, 1999, Can Vet J 40: 590-591). *W. equi* has been found on horses worldwide, however, there is a paucity of literature on the presence of *W. equi* on donkeys. Alphacypermethrin (ACYP) is a synthetic pyrethroid insecticide effective against a wide range of pests of many crops and is used for the control of several veterinary insects, including lice. In Italy, ACYP is marketed for cattle as a pour-on formulation. Therapeutics, such as antiparasitic compounds, are often administered to donkeys based on dosage and intervals recommended for horses and cattle, because very few drugs have donkey-specific label indications (Grosenbaugh et al, 2011, Equine Vet Educ, 23: 523-530). The literature lacks information on the use and the efficacy for donkeys of most insecticides. Therefore, the aim of the present study was to evaluate the field efficacy of ACYP pour-on against naturally occurring infestation of *W. equi* on donkeys.

MATERIALS AND METHODS: The trial was performed in a donkey farm, consisted of 40 donkeys, located in Southern Italy. In the absence of standardized guidelines for the quantification of lice on equids, the WAAVP guidelines used to evaluate the efficacy of ectoparasiticides in ruminants (Holdsworth PA et al, 2006, Vet Parasitol, 136: 45-54) and the louse counting procedures described for horses (Lowden S et al, 2007, Vet Parasitol, 148: 295-300) were used. On the day before treatment, louse counts were performed on 13 naturally infested donkeys by recording the individual louse count at seven louse predilection sites: head, neck/mane, shoulders/withers, foreleg, back, hindleg and tailhead/rump. For each count, the hair at the site (about 10 x 20 cm area) was parted with a comb and, the part inspected for a length of approximately 10 cm for live (motile) lice. On day 0 the study animals received ACYP pour-on (Renegade 1.5%, Pfizer Animal Health) at the manufacturer's recommended cattle dose rate. The formulation was applied topically along the midline of the back from the withers to

the tailhead. There was no untreated control group for animal welfare reasons. Louse counts were performed weekly (day -1, 7, 14, 21, 28, 35, 42, 49 and 56) by summing all predilection site counts. The efficacy (%) of ACYP was determined in terms of percent louse reduction using Abbott's formula as proposed by WAAVP guidelines: Efficacy = $100 \times [(C-T)/C]$, where T = louse count after the treatment and C = louse count before the treatment. The Body Condition Score (BCS) of each animal was determined prior to treatment (day -1) and at the end of study (day 56) using the BCS chart (The Donkey Sanctuary, 2003). Significant differences between sets of data were carried out using ANOVA.

RESULTS: In total 1,140 *W. equi* were recorded from the inspection sites on 13 study donkeys on day -1 (mean 87.7 ± 72.9). On the majority of the animals (76.9%) more than 40 lice were found prior to treatment. The infestations were variable between the study donkeys with counts ranging from 25 to 240 lice. More than the half of the louse burden was found in the area along the neck/mane (21.7%) and shoulders/withers (29.4%). The back, foreleg, head and hindleg sites contained 16.7, 14.0, 10.7 and 7.5% of the counted lice, respectively. No lice were found on tailhead/rump. For all post-treatment days of inspection, no lice were counted at the inspection sites or during whole body inspections, resulting in an efficacy of 100% for days 7-56. No abnormal animal health conditions related to treatment were observed during the study. The BCS values were in the normal range for donkeys and did not show a significant ($P > 0.05$) difference before and after treatment.

CONCLUSIONS: This field trial demonstrates that ACYP applied pour-on at the manufacturer's recommended cattle dose rate was completely effective, safe and user-friendly for the treatment of *W. equi* on donkeys.