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Resistance to anthelmintics has become a major problem in veterinary medicine. In horses, over recent decades, increasing resistance of small strongyles (cyathostomins) to several groups of anthelmintics (e.g. benzimidazoles) has been reported. The high prevalence of anthelmintic resistance in horses worldwide imposes that future control programs should be designed to slow the development of chemoresistance of parasites and to preserve the efficacy of the anthelmintic drugs in worm control programs. Investigations into the efficacy of current anthelmintics in different locations are important to help developing future reliable control programs. Here we present a survey on the efficacy of two anthelmintics (ivermectin — IVM and fenbendazole - FBZ) against equine strongyles in Romania, using a faecal egg count reduction test (FECRT). Horses with a strongyle faecal egg count (FEC) of >50 eggs per gram (EPG) were included in the study. The anthelmintic efficacy was determined by calculating the percentage of reduction in FEC between the group mean at Day 0 and Days 14 post-treatment. A total number of 186 horses residing in four stud farms have been selected for the survey. 120 and 66 horses were administered ivermectin (0.2 mg/kg) and fenbendazole (7.5 mg/kg), respectively. Individual faecal samples were examined for strongyle eggs using a modified McMaster technique with a sensitivity of 25 EPG, on Day 0 and Days 14 post-treatment. The efficacy of ivermectin against strongyles was confirmed in all four farms, with average values ranging from 98.4 to 100%. FBZ resistance was found on three farms, with mean fecal egg count reductions of 47.4%, 55.27%, and 75.4%, respectively. In conclusion, the findings emphasize the need for additional studies to provide reliable data on the presence and extension of the anthelmintic resistance phenomenon in Romanian horses.

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Comparison of a Smart-Phone based Automated Parasite Egg Count System to the McMaster & mini-FLOTAC Methods

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In the field of parasitology, fecal egg counts are an essential tool for determining the types of parasites present in an animal and obtaining data regarding anthelmintic resistance. This method poses several challenges; such as different test procedures, operator dependence, equipment availability, and time commitment. Thus, the field of parasitology is in need of an onsite, user-friendly and reliable fecal egg counting technique. A new technologically advanced diagnostic system involving a smartphone shows promise for generating automatic counts. The purpose of this study was to evaluate the consistency of the automated counting system through comparison to the manual McMaster and Mini-FLOTAC methods. This study used samples from 30 horses, with each method run in triplicates. This experiment involved homogenizing five grams of a fecal sample with 45 mL of sugar-salt flotation solution in the fill FLOTAC apparatus. This was used to fill three McMaster chambers and three Mini-FLOTAC slides, each with two chambers, for manual counting. The remaining sample was aspirated through a series of 400μm, 200 μm, and 90 μm filters to remove large debris particles. Three

milliliters of the filtered sample was pipetted onto each of three 20 μm filters to obtain concentrated eggs which were then bleached and stained with a fluorescent egg binding protein while on the filter. Each filter was attached to the smartphone docking unit complete with a LED light source and optical filter. The smartphone system uses an application with predetermined standards to photograph the fluorescently detected eggs and count them, as shown in Figure 1. Correlation values (R^2) and the coefficient of variation (CV) were used for statistical analysis. A previous pilot study generated data for the comparison of the smartphone system and the McMaster methods. The results for McMaster to Smartphone $R^2 = 0.77$, CV= 0.377. The Mini-FLOTAC data is still being generated at the time of this abstract, but will be presented at the meeting. Overall, the counts generated by the smartphone system compared reasonably to the manual methods and further improvements are already taking place.
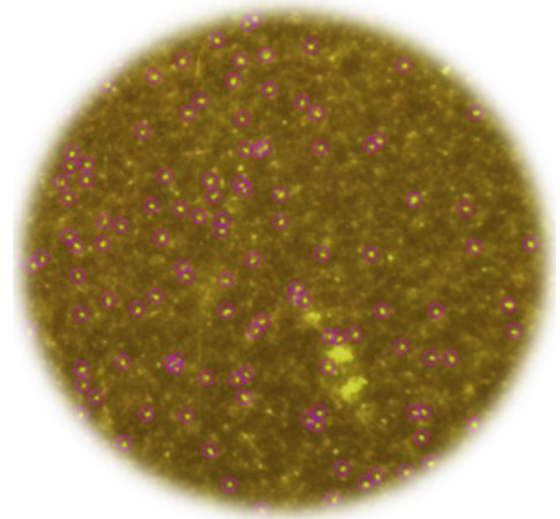
Figure 1. An image taken by the smartphone of concentrated, bleached, and stained strongyle eggs. The purple circles indicate identified and counted eggs.

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Objective evaluation of two deworming regimens in young Thoroughbreds using average daily gain, body condition score, and parasitological parameters

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Helminths parasitizing equids are capable of causing general ill-thrift, clinical disease, and death. Foals and young horses are especially susceptible to these parasites and their pathology and are the most intensively treated cohort. Despite this and the escalating problem of anthelmintic resistance, deworming regimens are rarely evaluated in this age group. This study evaluated the influence of two distinct deworming regimens on fecal egg counts and foal growth rates and body-condition scores in Thoroughbred foals for ~16 months. Three central Kentucky farms utilizing a standard monthly weighing system were enrolled in this study with a total of 48 Thoroughbred foals. These foals were

blocked by gender and birth-weight and randomly allocated to two treatment groups: an interval dose program receiving bi-monthly rotations of pyrantel pamoate and ivermectin beginning at two months of age and a daily deworming group receiving oxibendazole at two months of age, daily rations of pyrantel tartrate feed additive throughout the study, and moxidectin treatments at 9.5 and 16.5 months of age. In addition to collecting the performance parameters of monthly body weights and body condition scores, parasitological parameters, including pre- and post- treatment fecal egg counts (FEC) of Parascaris spp. and strongyle family parasites and calculated gel/paste dewormer efficacies were collected. Data were analyzed using mixed linear modeling. Ascarid and strongyle FECs were not statistically different between groups and were only significantly influenced by foal age; strongyle counts increased throughout the duration of the study and Parascaris spp. counts peaked at 4.5 months of age. Reduced efficacy of ivermectin and moxidectin against strongyles was observed on two farms respectively with consistently low pyrantel pamoate efficacy on all three farms. Ivermectin also exhibited reduced Parascaris spp. efficacy. Monthly body weight converted to average daily gain was not significantly different between groups and was only significantly influenced by age, mirroring the average daily gain reference data for Kentucky Thoroughbreds born in 2013 generated by Kentucky Equine Research. Body condition scores remained in the optimal range (5-6) for the duration of the study and did not differ between groups. This maintenance of optimal performance parameters is likely due to both the excellent immuno-nutritional status of these well-managed horses and the generally low pathogenicity of these gastrointestinal parasites. Both measures of parasitological and performance parameters are useful in evaluating parasite control programs in maintenance of overall equine health.

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Serological prevalence of *Anaplasma phagocytohilum* in two cities of Minas Gerais State, Brazil

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Anaplasma phagocytophilum is the recently emended name replacing three species of granulocytic bacteria, *Ehrlichia phagocytophila*, *Ehrlichia equi* and the agent of human granulocytic ehrlichiosis (HGE), based on their genetic similarity. *A. phagocytophilum* is an obligate intracellular organism that infects predominately white blood cells, especially neutrophils It is transmitted by ticks such as *Dermacentor (Anocentor) nitens*, *Ripicephalus (Boophilus) microplus* and *Amblyomma cajennense*. It can affect ruminants, horses, rodents, canids, birds and men. *A. phagocytophilum* is the agent of Equine Granulocytic Anaplasmosis (EGA) in the horse. EGA is currently described as an acute disease characterized by high fever, depression, lack of appetite, hind limb ataxia, distal limb edema, and hematological alterations, such as thrombocytopenia, neutropenia, lymphopenia and mild anaemia. In Brazil, few studies have been conducted regarding epidemiology of EGA, although veterinarians have described several clinical cases of this disease. In order to clarify its epidemiological situation, this study was carried out aiming a serological survey of equids in São Vicente de Minas and Ataléia,

both cities located on the state of Minas Gerais, Brazil. Blood was collected into clotting tubes through venipuncture of the horses' jugular external vein. A total of 84 animals from Ataléia and 88 from São Vicente de Minas participated in the study. Serum was then centrifuged and processed according to the Indirect Immunofluorescence Assay (IFA) protocol. Results showed that 76.16% (131/172) reacted to the IFA test, independently of the sample's city origin. In Ataléia, a prevalence of 70% of reactive animals were found, whereas in São Vicente de Minas the value was of 82%. These results demonstrate that the agent of equine granulocytic anaplasmosis is present in these cities and a high number of equines have been infected by *A. phagocytophillum*. Since EGA clinical signs are not specific, more clinical essays and controlled experiments should be performed. Only then will we better understand *A. phagocytophilum* infection and epidemiology, thus avoiding misdiagnosis and consequential financial losses to breeding farms as well as those to equine welfare.

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Detection of *Neospora* spp. antibodies in horses from La Pampa, Argentina

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Neospora caninum and *N. hughesi* are apicomplexan parasites affecting several animal species worldwide. Horses have been reported as intermediate hosts of these protozoans. *Neospora caninum* is an important cause of bovine abortion and neurological signs in dogs while *N. hughesi* is reported as potential cause of equine protozoal myeloencephalitis (EPM). Little is known about neosporosis in Argentinean horses. The aim of the present study was to indentify antibodies against *Neospora* spp. in horses from La Pampa, Argentina. Serum samples (n=42) were randomly selected from a group of 300 horses belonging to rural areas from La Pampa province, Argentina. All animals were clinically healthy. The samples were processed by 4 serological tests using *N. caninum* antigen: indirect ELISA (CIVTEST HIPRA) with G protein as conjugate; a competitive ELISA (VMRD) proceeding according to manufacturer instructions; indirect fluorescence antibody test (IFAT) and Immunoblot (IB) both using Nc1 strain as antigen. Serum sample from an experimentally infected (Nc1 strain) young horse was used as positive control. Positive serological results were detected as follows: 30% of samples (n=13) by ELISA-HIPRA, 28% (n=12) by IFAT, 26% (n=11) by IB and 16% (n=7) by ELISA-VMRD. A total of 12 samples resulted positive to 2 or more tests. Most of the positive samples (n = 9) were seropositive by IFAT and IB. Considering the positivity to these 2 tests as "true positive", 21.4% of horses showed antibodies against *N. caninum* antigens. Since potential cross reactions between Neospora spp. are plausible we considered the detected antibodies as genus-specific. Further studies should be conducted with specific *N. hughesi* serological tests for specific differentiation of the immunological responses observed. The present study is the first report of Neospora spp. antibodies detection in Argentinean horses. The seropositivity rate detected suggests that horses from La Pampa have a frequent contact with *Neospora* spp. Future studies will be conducted in horses with clinical signs.