Sensibility and specificity of the FAMACHA© method applied to sheep and goat

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The FAMACHA© method is based on correlation between the eyes mucous colour and the hematocrit values, identifying animals that are able to withstand infections by *Haemonchus contortus*. However, this method has been developed for sheep and applicable to goats, without any adaptation, since the eyes mucous colour from healthy goats has lower intensity leading to errors of interpretation. The aim of the present study was to compare the practicability, sensitivity and specificity of FAMACHA© method in crossbreed sheep and goat. A herd with 144 crossbreed sheep (Santa Inês, Dorper and Somalis) and a herd with 228 crossbreed goats (Anglo-Nubian x Saanen) from both sex, with age between 3 and 5 months were evaluated. Each seven days, during 98 days, feces and blood samples were collected to parasitologycal and hematologycal exams, degree of anaemia was determined by FAMACHA©, with total of 489 observations to sheep and 1838 to goats. The sensitivity and specificity were established as (I) animals with FAMACHA© 1 or 2 considered non anemic and animals with FAMACHA© 3, 4 or 5 as anemic and (II) animals with FAMACHA© 1, 2 or 3 considered non anemic and animals with FAMACHA© 4 or 5 as anemic. For the cut-off from PCV, were considered ≤15, ≤18 and ≤19%. Negative predictive value (NPV) and positive predictive value (PPV) were also obtained. In the majority of the experimental weeks, *Haemonchus* spp. was the predominant genus in composite cultures from sheep (88%) and goat (80%) herds. It was observed high frequence of FAMACHA 2 in sheep and goat (48.3% and 63.3%, respectively), while FAMACHA 5 was observed once in goat herd (0.05%). In sheep herd the second most observed FAMACHA was 3 (33.7%) and in goat herd was FAMACHA 1 (24%). Considering the first analyze (I) the correct treatment to PCV (≤15, ≤18% and ≤19) was 65%, 72.4% and 74%, respectively, to sheep and 87.2%, 86.7% and 86.4% respectively, to goat. As the second analyze (II), the correct treatment was 90.6%, 85.9% and 84.2%, respectively to sheep and 98.8%, 95.6% and 93.8% respectively to goat. The PPV ranged from 3% to 69.4% and PNV from 84.3% to 99.3%. The sensibility ranged from 3.5% to 92.1%, while specificity ranged from 61% to 99.8% according to species and PCV values and FAMACHA chosen as cut-off. For both herds, the highest specificity was at PCV ≤19 with FAMACHA 4 or 5 as negative (98.2% to sheep and 99.8% to goat). On the other hand, sensibility was higher when PCV ≤15 considering FAMACHA 3 4 or 5. The FAMACHA method is useful tool for identify anemic sheep and goat and it´s necessary deworm all animals score with FAMACHA 3 together that classified as 4 or 5, increasing the FAMACHA method sensibility without having an important effect on the rate of selection for anthelmintic resistance.

Key words: *Haemonchus*; negative predictive value; packet cell volume