Serological screening profile with ELISA assay in chronic bovine fasciolosis in Bistrita-Nasaud area

Screening serologic prin metoda ELISA in fascioloza cronica la bovine in zona Bistrita-Nasaud

Gabriela PREDESCU, GAINA M., COZMA V.,
University of Agricultural Science and Veterinary Medicine, Faculty of Veterinary Medicine, Department of Parasitology and Parasitic Diseases, 3-5 Manastur Street, Cluj Napoca, Romania.

ABSTRACT

In our country Fasciolosis can be found in all the areas excepting the Blak Sea's beach. The infested areas are the hills and the areas near the Carpathic mountains, and the fields of Transilvania (4), reason for what the infestation intensity study at bovines is a real interest. The goal of this study was the making of experimental research of infestation intensity with Fasciola hepatica of the bovines from areas Bistrita-Nasaud, by ELISA method. The researches were made in February 2007, in department of Parazitology and Parazitogical deases, Faculty of Veterinary Medicine from Cluj-Napoca. There were harvested 45 samples of bovine sera that were cut in slaughter-house of SC Agro-Ardeal Srl, with headquarters in Orheiul Bistriței, county Bistrita-Nasaud. The sera tests were examinated with ELISA assay for detedtion of antibody against Fasciola spp. From those 45 harvested samples, 29 samples were positive for Fasciola spp., by antibody detection with ELISA method (62%). There were 28% negative results on tested animals, and 10% from results were dubious. These results disclose the fact that infestation intensity with Fasciola hepatica at bovines from Bistrita-Nasaud county is 62%.

Keywords: Fasciola sp., ELISA from sera, bovines.

Introduction

Fasciolosis is a disease due to trematod, Fasciola hepatica, parasite in bile ducts in species of herbivores. In Romania is evolving species of Fasciola hepatica and Fasciola gigantica. Researchers consider that not exists in our Europa, Olteanu Gh. quotes that it exist in our country(8). In bovine fasciolosis usually evolves chronically or subclinical, latent with repercussions on productive indices(4). Owing to the difficulty of early diagnosis and nonspecific clinical signs, imunodiagnosis has become increasingly used in all countries because is not affected the life of definitive host and the possibility of examining a large number of samples in a short time and accuracy of diagnosis. Among these methods, detected of parasite antigens in faeces has become an alternative applied successfully(7). In immunology ELISA tests are used to detect substances that have antigenic properties, and generally have a high sensitivity and specificity. ELISA allows detection of serum antigens F. hepatica, being an early detection method(3). ELISA tests has the advantage of a high sensitivity and specificity from 98% to 100% for bovine serum. Infestation with Fasciola spp, can be demonstrated with 7-8 weeks earlier in case of ELISA test, than the coproparasitological methods used(1,2). This analysis has shown high sensitivity and specificity of serum ELISA from bovine serum. The main desire is to accurately detect infestations with Fasciola spp in bovine.. The diagnosis has major role in early detection of infestations, in the treatment before clinical manifestations of disease and before registration of economic loss, as well as in epidemiological studies for the proper execution of control programs.

Material and methods

The investigations were conducted during February 2007, in the Department of Parasitology and Parasitic Diseases, Faculty of Veterinary Medicine, Cluj-Napoca. Biological material was represented by 45 (n = 45) of cattle and buffetlo from Bistrița- Năsăud county. For detection
antibodies anti-fasciola, ELISA immunoassay tests was performed, using commercial kit Bio-
X Diagnostics Fasciola hepatica ELISA Kit (Bio K211)(Belgique). The test was carried out according to the method taken from the manufacturers protocols (test serum dilution 1 / 100 with buffer).

Results and discussion
Of the total sample (n = 45) of serum taken in study, harvested from animals from Bistrita-Nasaud 63% were positive in ELISA test, 28% of the animals tested were negative, and in 9% of samples the reaction was doubtful. Of the 45 animals, 4 were from buffalo species over 5 years old, 100% positive on immunoassay test. The remaining 41 animals were derived from bovine species, aged from 5 to 8 years, of which 23 were positive in ELISA test.

The largest percentage of positivity was obtained to detect antibodies against Fasciola through technique ELISA (63%), which shows higher sensitivity of this method, only able to detect the development of fasciolosis in patent and pre-
patent phase, in this disease(Fig 1).

Coprosopic diagnosis of infestation with Fasciola spp in definitive hosts, bovines, is difficult, because the number of eggs produced by Fasciola / day is very small, and is discontinuous. Diagnosis is worthless in acute fasciolosis and in the first phase of chronic fasciosis. Parasitic infestation of the definitive host(GD) can be detected through coprosopic method only after 12 weeks after infestation.(2,6).

It was found that the coprosopic diagnostic sensitivity is 69.0%, but if is repeated it occurs may reach a sensitivity of 90%. Diagnosis by examination of bile samples revealed a sensitivity of 93.4%. ELISA diagnostic sensitivity was estimated at 93.7%. The results show that bovine fasciolozei prevalence is higher than expected, because of the low rate of diagnosis through coprosopic method.(1,9).

ELISA is a high sensitivity advantage and specificity of 98% to 100% for bovine serum. Infestation with Fasciola spp, may be a 7-8 weeks earlier demonstrated than the copoparasitological methods used. This analysis has shown high sensitivity and specificity for ELISA test of bovine serum.

Among these methods, detection of serum antibodies against Fasciola became alternative successfully applied.(5)

**Fig. 1.** Infestation prevalence with *Fasciola hepatica* with immunoensimatic assay ELISA in bovine from Bistrita-Nasaud county

Conclusions
ELISA method used to detect antibodies against *Fasciola spp.* was superior to the other methods used(coprosopic), with a high sensitivity, the percentage of positivity obtained being 63%.

**REZUMAT**
In țara noastră fascioloza este raspândită în toate regiunile cu excepția litoralului Mării Negre. Zonele puternic infestate sunt zonele deluroase și preuntoase ale arcului Carpatic precum și în podișul Transilvaniei, motiv pentru care studiul intensivității infestației cu Fasciola hepatica la bovine prezintă un real interes. Scopul acestei lucrări a fost realizarea de cercetări

Cuvinte cheie: Fasciola spp., ELISA din ser, bovine.

Reference


