

Ginbar Tefera, 2008

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MSc in Tropical Animal Health

Development of a dipstick ELISA for the detection of circulating antigens of *Taenia saginata*/*Taenia solium* cysticercosis

Summary

Taeniosis/cysticercosis complex is a major public health problem worldwide. Control of this zoonosis requires a good diagnostic test to identify animals harboring live metacestodes. Visual meat inspection, which is the only public health measure implemented to control human infections, is a poorly sensitive method to detect such animals. The monoclonal antibody (MoAb)-158C11 and 60H8-based enzyme-linked immunosorbent assay (ELISA) for the detection of circulating antigens (Ag-ELISA) is a much more sensitive assay. However, expensive laboratory equipment is needed to carry out this test. Therefore, the aim of the present study was to develop a MoAb-158C11 and 60H8-based dipstick Ag-ELISA using the Nunc-immunoTM stick system (Maxisorp), in order to reduce the need for expensive equipment. Series of tests were done to determine the optimal condition of the dipstick Ag-ELISA using three positive and two negative serum samples. After determination of the optimal conditions, the assay was evaluated on cattle (n=30) and pig (n=15) serum samples. The performance level of the assay was determined on serial dilutions from a positive sample. The standard Ag-ELISA on microplates was used as a reference test. The dipstick Ag-ELISA detected a maximum dilution having 0.348 OD reading as measured on the standard Ag-ELISA. The standard Ag-ELISA detected a dilution with 0.170 OD reading. The dilution test showed that dipstick Ag-ELISA is less sensitive than standard Ag-ELISA. However, the assay detected all standard Ag-ELISA positive sera from cattle (n=11) and pigs (n=7) naturally infected with *Taenia saginata* and *Taenia solium* metacestodes, respectively. There was no false positive result, suggesting the specificity of the test. These findings, especially the result obtained from testing of serum samples from naturally infected cattle and pigs, suggest that the test is helpful for the diagnosis of *T. saginata* and *T. solium* cysticercosis. This assay can be used in settings where the microplate ELISA is impractical.

Keywords: Nunc-immunoTM, MaxiSorp, Dipstick, ELISA, Cysticercosis, Taenia saginata, Taenia solium, Cattle, Pig

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Yes