ESTABLISHMENT AND VALIDATION OF AN IMMUNOFLUORESCENCE ANTIBODY TEST (IFAT) TO DIAGNOSE SARCOSYSTIS INFECTION IN CATTLE

A PROJECT REPORT PRESENTED BY

MEENU CHATURIKA VITARANA

to the Board of Study in Biochemistry and Molecular Biology of the
POSTGRADUATE INSTITUTE OF SCIENCE

in partial fulfilment of the requirement
for the award of the degree of

MASTER OF SCIENCE IN EXPERIMENTAL BIOTECHNOLOGY

of the

UNIVERSITY OF PERADENIYA
SRI LANKA
2009

ESTABLISHMENT AND VALIDATION OF AN IMMUNOFLUORESCENCE ANTIBODY TEST (IFAT) TO DIAGNOSE SARCOSYSTIS INFECTION IN CATTLE

Abstract

Sarcocystis is an important parasite in the livestock industry, causing acute and chronic disease in cattle, which often results in abortions in females. This work was designed to establish a time-efficient immuno-fluorescent assay for diagnostic as well as sero-prevalence studies in cattle.

Teflon coated slides were prepared with bradyzoites extracted from macroscopic sarcocysts as the antigen. Positive samples were established by clinical observation, while negative samples were determined during the development of the test.

A serological survey conducted on 130 test samples reported prevalence of infection as 13%, where 5% was of heavy and 8% mild infection, with an antibody titer value of 1:160 for heavy infection. No cross reaction with *Neospora* and *Toxoplasma* was observed in the subsequent tests carried out. Serological survey for *Neospora* infection reported a sero-prevalence of 10% heavy infection and 17% mild infection among the same 130 samples. Immuno fluorescent studies in cross sections of muscle cysts determined the specificity of antibody binding sites around the cysts and surface of the bradyzoites and it did not appear with *Toxoplasma* and *Neospora* positive sera. Thus it was revealed that IFAT is a more reliable serological assay for the determination of antibodies against *Sarcocystis* infection in animals. Polymerase Chain Reaction studies further determined the identity of the muscle cysts to belong to *Sarcocystis* species and not any other closely related species.