ASSESSMENT AND *IN VITRO* REVERSAL OF ANTHELMINTIC RESISTANCE IN *HAEMONCHUS CONTORTUS*

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MVM 10045 (VPA)

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IN
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to the

TAMIL NADU VETERINARY AND ANIMAL SCIENCES UNIVERSITY
CHENNAI – 600 051

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CERTIFICATE

This is to certify that the thesis entitled **"ASSESSMENT AND *IN VITRO* REVERSAL OF ANTHELMINTIC RESISTANCE IN *HAEMONCHUS CONTORTUS*"** submitted in part fulfillment of the requirements for award of the degree of **MASTER OF VETERINARY SCIENCE IN VETERINARY PARASITOLOGY** to the Tamil Nadu Veterinary and Animal Sciences University, Chennai, is a record of bonafide research work carried out by **R.LAKSHMIPRIYA** under my supervision and guidance and that no part of this thesis has been submitted for the award of any other degree, diploma, fellowship or similar titles or prizes and that the work has not been published in part or full in any scientific or popular journal or magazine.

Place : Chennai-7
Date : 29.06.2012

(Dr.S.GOMATHINAYAGAM) 29/6/12
Chairman

RECOMMENDED

Date : 3/8/2012

Place : Bangalore

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EXTERNAL EXAMINER

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ABSTRACT

Title	:	**ASSESSMENT AND *IN VITRO* REVERSAL OF ANTHELMINTIC RESISTANCE IN *HAEMONCHUS CONTORTUS***
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Haemonchus contortus from two hundred and fifty sheep abomasal contents was checked for development of resistance to anthelmintics of benzimidazole group and ivermectin by *in vitro* egg hatch assay (EHA) and larval migration inhibition assay (LMIA). *Haemonchus contortus* from forty two abomasal contents (16.8%) was found to be resistant to benzimidazoles in EHA where as *H.contortus* in fifty abomasal contents (20%) showed resistance to ivermectin in LMIA. Allele specific PCR (AS-PCR) indicated the presence of resistant allele (rr) confirming the *in vitro* assessment of resistance to benzimidazoles in EHA. MDRP modulating agents like verapamil was successfully tested *in vitro* to achieve partial reversal in benzimidazole and ivermectin resistance. Highly significant ($P< 0.01$) reversal of resistance occurred when TBZ

resistant *H.contortus* eggs were treated with verapamil and resulted in the increased inhibition of egg hatch. Significant reduction in the larval migration ($P<0.05$) was observed after treatment with verapamil indicating increased toxicity to IVM. There was decrease in the levels of glutathione in the resistant larvae after treatment with verapamil at 2, 3 and 4 hours respectively indicating a possible role of glutathione in resistance and decrease in the levels caused by verapamil had led to partial reversal of resistance.