Cairo University

Faculty of Veterinary Medicine
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A Trial for Preparation of Mucosal Vaccine for Foot and Mouth Disease Virus

A Thesis Submitted By

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ABSTRACT

Mucosal vaccines for foot and mouth disease virus are expected to block viral entry, thus, limiting (FMDV) spread in the cattle herd. Immunization strategy based on both mucosal and systemic immunity platforms is greatly needed to control FMD. In this study, several immunization strategies, using two foot and mouth disease vaccine formulations, including Montanide ISA 206 oil - based FMD inactivated vaccine and Montanide IMS 1313 VG N PR - based concentrated semi-purified FMD mucosal vaccine were applied. Results of intra nasal immunization with the prepared FMD mucosal vaccine given, once or twice, induced IgA levels in both nasal and salivary secretions besides a high response of lymphocyte proliferation with protection levels reaching 20% and 40%, respectively, in a challenge trial in cattle. Prime boost strategy based on the administration of mucosal vaccine followed by inactivated vaccine appeared to be the most potent strategy, achieving 100% protection against an FMDV challenge. Indeed, the study reports the efficacy of the prepared IMS 1313 FMD mucosal vaccine and the possible use of this vaccine in the context of different vaccination strategies to control FMDV.

Keywords: FMDV; mucosal vaccine; immunization strategy; prime boost.

Dedication

For

My amazing father,

My wonderful mother,

Marwa,

Mohamed,

and

My adorable friends

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I am greatly indebted in all my work and success to our merciful ***(ALLAH)***

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