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Cairo University
Faculty of Veterinary Medicine
Department of Virology



Screening Oils of Plant Origin for Use as Adjuvant in Avian Influenza H5N8 Vaccine

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(B.V.Sc., Cairo University, 2016)

For the Degree of Master in Veterinary Medical Sciences

(Virology)

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ABSTRACT

Elimination of avian influenza from Egypt is challenging and complicated by the existence of several subtypes, including the highly pathogenic avian influenza (HPAI) H5N8. In least developed countries, vaccination is the most reasonable alternative to stamping out the infected farms and to ensure food security and decrease environmental contamination. Whole inactivated emulsion based vaccines are the commonly used for vaccination against HPAI. Oily adjuvants are extremely used in vaccine formulation. Most adjuvants are imported. Mineral oil present in most adjuvants having long withdrawal time and incriminated in carcinogenesis due to aromatic hydrocarbons. Plant based oils which considered as metabolizable oil and of low local reaction at injection site may represent a substitution for mineral oil. In our study, we formulated Inactivated AI vaccine against (H5N8) with different crude plant oils. Evaluation of their effect on humeral immunity and protection of chickens against homologous viral challenge. We compare the results of plant based oils with results of ISA71,mineral and paraffin oils.

All plant oils induced seroconversion in both virus neutralization and HI assays in vaccinated groups as compared to non vaccinated control group; however the antibody titer were lower than ISA 71, paraffin and mineral oil. Best Protection against mortality among vegetable oils obtained from pumpkin oil (85%),jojoba(71%) and sesame oil(57%). Among plant oils sesame, pumpkin and jojoba reduced virus shedding from 3rd day post infection, but all three were still higher in shedding virus than ISA 71 , paraffin and mineral. Most plant oils were safe to be used as adjuvants in AI vaccines in chickens except sage, castor, cuminum and tea tree oil which killed chickens just after injection.

Among vegetable oils, pumpkin can be used as adjuvant and further studies needed to be done on pumpkin.

Key words: Highly Pathogenic Avian Influenza, H5N8 subtype, Adjuvant, Plant Origin oils, vaccination.



Dedication

To my Great Father and Mother

My Beloved Sisters

My Beloved Wife

My Beloved Daughter (Farida)

To all of my family

And everyone supported me

during my work

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