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Comparative study on different types of inactivated Pasteurella vaccine for rabbits

A Thesis Presented By

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Abstract

Snuffle disease is one of the most important health problems in rabbits. It is caused by *P. multocida*. A total of 116 New-Zealand rabbits were used in evaluation of four prepared polyvalent *P. multocida* (serotypes A: 1, A: 3, A :12 and D: 2) vaccines. First vaccine was formalized non adjuvanted Pasteurella vaccine (FV). Second one was Lipid A adjuvanted Pasteurella vaccine (AV) in which the Lipid A was self-prepared, extracted from *E. coli* O: 157 and evaluated by High Performance Liquid Chromatography (HPLC). Third one was Montanide ™ ISA 70 VG adjuvanted Pasteurella vaccine (MV). Fourth one was Montanide ™ IMS1313 VG N PR adjuvanted Pasteurella vaccine (NV) and finally control groups. Comparisons between the prepared vaccines were done by challenge test, Lysozyme activity test, IHA test and ELISA. Statistical analysis was done. Montanide™ ISA 70 VG adjuvanted Pasteurella vaccine and Lipid A adjuvanted Pasteurella vaccines were the best, followed by Formalized non adjuvanted Pasteurella vaccine then Montanide ™ IMS1313 VG N PR adjuvanted Pasteurella vaccine.

In conclusion, the 1st dose vaccination may need bootstring for better results. Montanide™ ISA 70 VG and Lipid A adjuvanted Pasteurella vaccines were the best two in the prepared vaccines. Vaccination and bootstring by Montanide ™ ISA 70 or Lipid A adjuvanted Pasteurella vaccines give 100 % protection.

Key words: *P. multocida*, Lipid A, Montanide, Vaccine, one-shot, HPLC.

بسم الله الرحمن الرحيم

﴿ إِنَّمَا يَخْشَى ٱللَّهَ مِنْ عِبَادِهِ ٱلْعُلَمَٰٓؤُاْ إِنَّ ٱللَّهَ عَزِيزٌ غَفُورٌ ﴾

صدق الله العظيم

الأية (٢٨) من سورة فاطر

Dedicated

To:

My Mother,

My Father,

My wife,

My sister,

My Brothers

And

My daughters.

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First and foremost extremely grateful and thankful to ***Allah***

Who gave me the ability and power to finish this work.

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List of abbreviations

AEs	Adverse events
AF	Acriflavine test
Ag	Antigen
AI	Avian influenza
ALV	Aluminum hydroxide gel vaccine
AMPT	Active mouse protection test
APCs	Antigen presenting cells
Bb	*Bordetella bronchiseptica*
CD	Cluster of differentiation
CFU	Colony forming unit
CIE	Counter immunoelectrophoresis
D.W.	Distilled water
ELISA	Enzyme linked immunosorbent assay
EMB	Eosin Methylene Blue Agar
FI-RSV	Formalin-inactivated respiratory syncytial virus
GA-SRBC	Gluteraldehyde fixed sheep red blood cells
GDPT	Gel-diffusion precipitin test
GMT	Geometric Mean Titer
HA	Hemagglutination test
HI	Hemagglutination inhibition test
HPLC	High performance liquid chromatography
ICH	International conference harmonization
I/D	Intradermal
IM	Intra muscular
IFN-γ	Interferon gamma
IHA, IHAT	Indirect haemagglutination test
IL-2	Interleukin 2
ISA	Incomplete Seppic Adjuvant
LBP	Lipopolysaccharide binding protein
LD_{50}	Lethal dose 50
LOD	Limit of detection
LOQ	Limit of quantification

LPS	lipopolysaccharides
MAbs	Monoclonal antibodies
MAT	Micro agglutination test
MD	Myeloid differentiation
ME	Multiple emulsion adjuvant vaccine
MHCII	Major histocompatibility class II
Mins	Minutes
MN	Microneedle
MPL A	Monophosphoryl Lipid A
MyD88	Myeloid differentiation factor 88
No.	Number
OAV	Oil adjuvant vaccine
OPD	Ortho-phenylene-diamine
OV	Oily adjuvant vaccine
PBS	Phosphate buffer saline
PM	Post mortem
PMT	*Pasteurella multocida* toxin
PMPT	Passive mouse protection test
RSD	Relative standard deviation
RSV	Respiratory syncytial virus
S/C	Subcutaneous
SAEs	Serious adverse events
SPF	Specific pathogen free
TAAs	Tumor-associated antigens
Th2	T helper type 2
TIR	Toll-interleukin 1 receptor
TLR	Toll like receptor
TNF	Tumor necrosis factor
TRIF	Toll-interleukin 1 receptor domain-containing adapter inducing interferon-β
TSA	Tryptone soya agar medium