



EFFECT OF ROUTE OF ADMINISTRATION ON IMMUNE RESPONSE TO COMBINED FOOT AND MOUTH DISEASE, HAEMORRHAGIC SEPTICAEMIA AND BLACK QUARTER OIL ADJUVANT VACCINE IN CATTLE

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Abstract

The immune response to combined Foot and Mouth Disease (FMD), Haemorrhagic Septicaemia (HS) and Black Quarter (BQ) oil adjuvant vaccine subsequent to subcutaneous and intramuscular route of administration was conducted in twenty unvaccinated calves at four months of age. Both routes of vaccination produced satisfactory level of immune response on the 21st day post vaccination. No systemic reaction was observed in both the routes except for a mild swelling at the injection site observed in subcutaneous route.

Key words: Immune response, oil adjuvant vaccine, cattle

Infectious disease like Foot and Mouth Disease, Haemorrhagic Septicaemia and Black Quarter are of major economic importance to the Indian farmers. Regular prophylactic vaccination against these diseases can reduce the incidence as well as the intensity of the disease in endemic areas. The immune response of cattle to combined FMD, HS and BQ oil adjuvant vaccine administered by different routes are studied in the present work.

Materials and Methods

Twenty unvaccinated four month old calves of either sex were selected randomly from the University Livestock Farm, Mannuthy and were divided into two groups (Group I and II) of ten animals each. Raksha "Triovac" vaccine at a dose of three ml was administered subcutaneously for group I animals and

intramuscularly for group II animals. Serum samples were collected from all the animals before vaccination. LPB ELISA was employed to assess neutralising antibody titres against O, A, C and Asia-I FMD virus antigens as per Hamblin *et al.* (1986). Indirect ELISA test was performed to determine the serological response to HS and BQ as per Natalia *et al.* (1993).

Results and Discussion

On subcutaneous injection, no systemic reaction was observed but there was a local swelling at the injection site, which remained for four days in all the ten animals. Immune response to subcutaneous administration on day zero and on 21st day is given in Table 1. The level of immune response on 21st day post vaccination for all antigens of FMDV, *Pasteurella multocida* and *Clostridium chauvoei* were above the protective titre.

The immune responses to intramuscular trials on day zero and on 21st day are furnished in Table 2. No systemic or local reaction was observed in the animals after injection. All the animals produced protective level of immune response on 21st day to O, A, C, Asia I, HS and BQ antigens. These findings correlate with the findings of Rao *et al.* (1993) who reported satisfactory antibody response to FMD oil adjuvant vaccine on 21st day post vaccination. It could be concluded that the combined FMD, HS and BQ oil adjuvant vaccine can be used subcutaneously or intramuscularly as both the routes produced satisfactory level of immune response on 21st day.

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Table 1. Antibody titre to FMD Virus type O, A, C, Asia 1, HS and BQ by subcutaneous route.

	FMD antigens (log ₁₀ SN ₅₀)				HS & BQ antigens (ELISA units)	
	O	A	C	Asia 1	HS	BQ
Day 0	1.277	0.689	1.766	0.953	41.02	27.89
Day 21	1.61	1.135	2.084	1.604	87.4	53.00

(For the protection of FMDV type 'O' the titre of 1.5 and above is taken as protective,

For the protection of FMDV type 'A' and type 'C' the titre of one and above is taken as protective,

For the protection of FMDV type Asia 1 the titre of 1.4 and above is taken as protective,

For the protection of *Pasteurella multocida* and *Clostridium chauvoei* the titre of 50 and above is taken as protective)

Table 2. Antibody titre to FMD virus type O, A, C, Asia - 1, HS and BQ by intramuscular route.

	FMD antigens (log ₁₀ SN ₅₀)				HS & BQ antigens (ELISA units)	
	O	A	C	Asia 1	HS	BQ
Day 0	1.351	0.906	2.117	1.092	70.39	17.93
Day 21	1.671	0.913	2.214	1.271	94.5	41.4

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