

RESEARCH PAPER

A study of immune response of calves given varying doses of bio film haemorrhagic septicaemia vaccine

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Accepted : March, 2009

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ABSTRACT

A preliminary investigation was undertaken to examine whether the presently recommended dose of Haemorrhagic septicaemia vaccine, 5-10 ml needed any revision and also to evaluate the suitability of passive haemagglutination assay and complement fixation test for measuring immunity in comparison with direct potency test. It was concluded that the three different doses of Biofilm Haemorrhagic septicaemia vaccine in calves conferred satisfactory immunity. The complement fixation test titres unlike passive haemagglutination assay titres were closely related to direct potency test.

Key words : Complement fixation test, Passive haemagglutination Assay (PHA), Biofilm vaccine, Immune

Haemorrhagic septicaemia (H.S.) in bovines is an acute septicemic infectious disease principally caused by *Pasteurella multocida* serotype B: 2. In India, the disease is known to occur throughout the country, accounting for 46 to 55 per cent of the total mortality in bovines due to infectious diseases (Dutta *et al.*, 1990). The disease is commonly encountered in the beginning of monsoon season. The *Pasteurella* organisms are known to be the normal inhabitants of upper respiratory tract of bovines and they assume a pathogenic role whenever resistance of the host is lowered due to "stress" resulting in precipitation of clinical disease hence it is very difficult to predict the exact time of out break of this disease. Due to peracute nature of the disease, prophylactic mass vaccination of animals appears to be the only method of choice to control this infection in bovines, rather than treatment of individual animals. Presently, broth vaccine with potash alum adjuvant is widely used in India.

But in spite of repeated vaccinations, still outbreaks of the disease occur due to poor immunogenicity of vaccine and changes in the expression of immunogen by the pathogen *in vitro* than those produced *in vivo*. Hence, there is a great concern to evolve an alternate vaccine to overcome the above problems. Therefore, biofilm form of pathogen which mimics natural infection (Costerton *et.al.*, 1987, Prakash *et.al.*, 2003a) was experimentally evaluated and Biofilm vaccine gives longer duration of protection than conventional vaccines for the control of Haemorrhagic septicaemia in cattle.

MATERIALS AND METHODS

Vaccine:

Biofilm. *Haemorrhagic septicaemia* vaccine produced in the Institute of Animal Health and Veterinary Biologicals, Bangalore, was used.

Calves:

Three groups of three calves in each were used in the experiment and were vaccinated subcutaneously as follows.

| Group No. | Vaccine dose |
|-----------|--------------|
| I | 10.0 ml |
| II | 5.0 ml |
| III | 3.0 ml |

Also two calves used as control group.

Potency test:

After three weeks of vaccination, all the vaccinated calves along with control calves were challenged with 1.0 ml of 1:10 dilution an 18 jour old P₅₂ (Phase-I) culture as per the method used for potency testing of Haemorrhagic septicemia vaccine.

Serological studies:

Serum samples were collected from all vaccinated calves before vaccination, three post vaccination, and first and second weeks post challenge. Serum samples were also collected from control calves just before challenge. Passive haemagglutination test and complement fixation