



## Technology DRDO 086: Herbal Adjuvant: DIP-HIP

DIPAS has developed a new herbal adjuvant, called DIP-HIP, and compared its efficacy with complete Freund's Adjuvant and Alum. Animals were immunized with different antigens. The results indicated that antigen specific immunoglobulin levels were significantly enhanced by DIP-HIP. The cytokine profile also correlated very well with the Th1 and Th2 type of immune response generated on administration of DIP-HIP. Interestingly, using different strains and different species, DIP-HIP responded better than CFA. The sustenance of antibody response in the body was for about more than four months using DIP-HIP.

The technology is a herbal adjuvant which is an agent that may stimulate the immune system and increase the response to a vaccine, without having any specific antigenic effect in itself. It causes no injection site reaction, pyrogenicity or muscular damage. The technology elicits immune response against bacterial, viral and recombinant proteins, enhances immunogenicity of weak antigens by generating both humoral as well as cell mediated immune response.

Additionally,

- Can be mixed directly with vaccine antigens without any further processing.
- Creates smooth, uniform mixture when added to antigens
- The mixture easily passes through 25 G needle.
- Requires no addition of preservatives.
- Can be stored for 4 months at 4 degree centigrade in formulation form and 3 years in dry powder form.
- Does not alter viscosity of the final vaccine product.

Immunization through different routes like intraperitoneal and intramuscular did not show any significant difference nor caused any muscular damage, granulomatous reaction or dystrophy. The shelf life of DIP-HIP as such is for more than 3 years where as in the form of formulation with and antigen is about 4 months at 40 C. There is no haemolytic activity observed on treatment of both human and animal erythrocytes with DIP-HIP.

The DIP-HIP adjuvant could prove to be of due benefit in the healthcare segment by inducing the immune response. Incorporation of DIP-HIP will result in enhancing, accelerating and prolonging the antigen specific-antibody responses in animals. The results are claimed to be at par with oil adjuvant but more significant than those of alum. Thus the new adjuvant developed can substitute oil and alum adjuvants. Further advantages of DIP-HIP are the enhancement of immunogenicity, the reduction of antigen amount needed for a successful immunization, the reduction of frequency of booster immunization without any muscular damage or side effects.

### IP Status

- A patent, "Development of a new herbal adjuvant from Seabuckthorn Hippophae rhamnoides leaves" 212/DEL/2007, was applied for in India.

### Contact

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