

Trends in Adjuvant and Vaccine Delivery Systems

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Since time immemorial, adjuvants have played a very crucial role in a vaccine formulation. Mere antigen discovery does no good until unless combined with an effective adjuvant. The modern era of vaccinology has transcended way beyond the conventional approach of prophylaxis, where it is driven more towards achieving specific and targeted effects. With With effBe efegnd treñicrãÄA

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adjuvant-mediated pathways in the host, it was realised that a complex interaction with immune cells like Langerhans cells, macrophages and dendritic cells might play a significant role in host immune modulating. So a series of bacterial extracts derived from *Mycobacterium tuberculosis*, *M. avium*, and saprophytic strains of mycobacteria were tried and tested for their effect on immune cell stimulation. Additional activity was also found in DNA and RNA digests [10]. Structural work on a few key strains like *M. bovis*, *Nocardia rubra* and *Listeria monocytogenes* led to isolation of muramyl dipeptide (MDP) from their cell wall [11]. Subsequently, several works continued in a similar aspect with cell wall derived factors like Wax C, Wax D, phosphatide, and cord factor fractions [12]. The antibody-enhancing adjuvant activity of both poly A:U and polyribo I:C was demonstrated with rabies vaccine. In addition, polylysine/carboxymethyl cellulose-stabilized poly I:C mediated interferon induction in primates was taking a promising turn [13-15]. By the 1970s, the possibility in poly M_e tum [10] [10] [10] is immun R id' uot i

Laser vaccine adjuvants

The use of non-destructive lasers to alter tissue immune responses is

