Adjuvant (Lab2)

Adjuvant: Is a pharmaceutical or biological substance that helps to create a stronger immune response in the patient's body. In the other words, adjuvant stimulates the immune system.

❖ Advantages of adjuvant:

1. Prolong retention of Ag and protect it from proteolysis enzymes.
2. Stimulates better T-cell response.
3. Stimulates greater Abs response.
4. Activate microphage to enhance phagocytosis.
5. Development of good memory.

❖ Mechanism of action of adjuvant

Adjuvants may act by a combination of various mechanisms includes:-

1. Formation of depot that traps antigens at the site of injection
2. Indication of cytokines
3. Recruitment of immune cells.
4. Promoting antigen transport to draining lymph nodes.

Types of Adjuvants

1. Inorganic salts Includes :-

A. Aluminum hydroxide: is a powerful absorbent and less tendency settle during prolonged storage than other salts.

B. Aluminum phosphate: is less effective absorbent, but it is an excellent with some purified Ag.

C. Calcium phosphate: is well used with some vaccine.

2. Oily emulsion or suspension: emulsion consists usually from aqueous solution or suspension of vaccine in mineral oil .Emulsion adjuvant in turn is divided in to:-

A. (W/O) Water in oil emulsion :

CFM: Complete Freund s Adjuvant. Water in oil emulsion with killed *Mycobacterium bovis* .

IFA : **Incomplete Freund s Adjuvant** Water in oil emulsion without killed *Mycobacterium bovis* .

Application: Very efficient adjuvant, it is used to achieve Iong –term protective responses.

B. (O/W) Oil Water in oil

Application: Well –tolerated adjuvant that induces a powerful, short –term protective immune response.

C. (W/OW) Water- in- oil - in -Water

Application: Well –tolerated adjuvant that induces both short and Iong term protective immune response.

Distinguish between (W/O) and (O/W)

A small drop of emulsion placed on the surface cold water