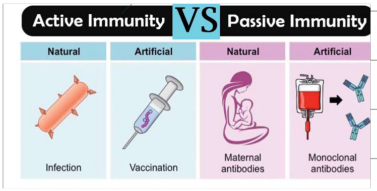
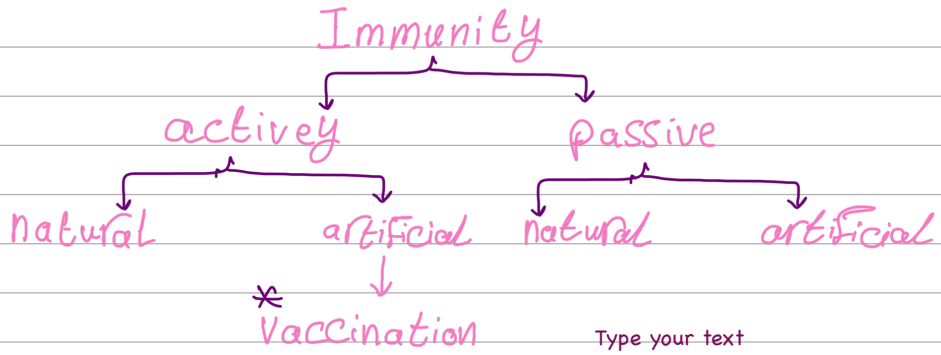
A Summary for L15 Immunity vaccines





Type your text

Passive natural immunity (maternal antibodies) protect against → measles, rubella and tetanus.
Passive artificial (intravenous immunoglobulins) → prophylactically in immunodeficiency diseases & treatment of rabies.

Vaccines (the most important part):-

(1) Live-attenuated vaccines →
less virulent patho ens (altered, weakened, selected)
produced generally from viruses rather than bacteria.

the most common method to obtain them → passing the virus through a series of in vitro cell cultures.

classical examples produced by serial passage → measles, rubella, mumps, varicella, OPV.

only live attenuated bacterial vaccine → BCG

IPV → inactivated polio vaccine.

(2) Non live vaccines → 2 (types of it)

(a) whole pathogen
↓
produced by heat, radiation
chemicals → formalin, formaldehyde

examples of the whole pathogen → whole cell pertussis, IPV, rabies and hepatitis A vaccine.

(b) Sub unit vaccines
parts of the pathogen

Arrangement according to vaccine effictiveness

Live attenuated > inactivated pathogen > Subunit vaccine

non-live vaccine

examples of Subunit vaccines →

acellular pertussis, tetanus toxoid, seasonal influenza, pneumococcal poly saccharide vaccine hepatitis B vaccine, malaria vaccine.

Vaccination/ Non-live vaccines/ Subunit vaccines

three ways to prepare Subunit vaccine →

1

- Antigenic proteins can be **purified** from preparations of the whole pathogen, as for the acellular pertussis vaccines, or can be **produced by recombinant genetic engineering.**

example

- **Acellular pertussis vaccines** are other examples of **purified antigenic proteins**. These vaccines contain between one and five highly purified pertussis antigens, compared to more than 3000 antigens for whole-cell inactivated pertussis vaccines.

2

example

- An example of **recombinant protein vaccine** is provided by the widely used hepatitis B vaccine in which the gene of the **hepatitis B surface antigen (HBsAg)** has been inserted into appropriate vectors for production in yeast.

3

example

- The concept of combining recombinant proteins helped to develop the first malaria vaccine. In this vaccine, the gene of a **surface protein** of the infectious form of **Plasmodium falciparum** is fused to the **HBsAg gene**, and the resulting recombinant fusion protein is expressed in yeast with free recombinant HBsAg.

more about toxoid vaccines →

clostridium difficile
clostridium tetani
Corinye bacterium diptheria

Cause disease by → pathogenic toxins

toxoid vaccine ← detoxifying the toxin by heat: chemicals or both

like those against diphtheria & tetanus

No herd-immunity

Live attenuated (LAV)
- Tuberculosis (BCG)
- Oral polio vaccine (OPV)
- Measles
- Rotavirus
- Yellow fever

Inactivated (killed antigen)
- Whole-cell pertussis (wP)
- Inactivated polio virus (IPV)

Subunit (purified antigen)
- Acellular pertussis (aP).
- *Haemophilius influenzae* type B (Hib).
- Pneumococcal (PCV-7, PCV-10, PCV-13)
- Hepatitis B (HepB)

Toxoid (inactivated toxins)
- Tetanus toxoid (TT).
- Diphteria toxoid