

Serology and vaccinology

مصول ولقاحات

Lec14



New strategies for vaccine preparation

Currently many diverse therapeutic vaccine strategies are under development or being evaluated in clinical trials. Based on their content, they may be classified into different categories, including cell-based vaccines, subunit vaccines, and genetic vaccines. Each of these vaccine platforms targets specific immune pathways and has strengths and weaknesses detailed in our next discussion. One of the major goals for these vaccine strategies is to break the tumor-related immunosuppression

Edible vaccines :

Development of edible vaccines involves:

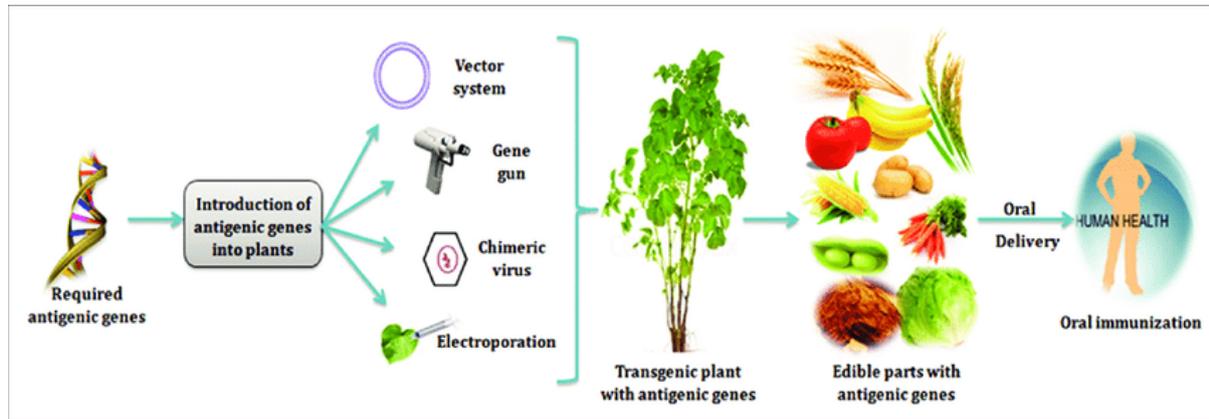
the process of incorporating the selected desired genes into plants and then enabling these altered plants to produce the encoded proteins. This process is known as transformation, and the altered plants are known as transgenic plants. Edible vaccines like traditional subunit vaccines consist of antigenic proteins and are devoid of pathogenic genes

this edible vaccines offer cost-effective, easily administrable, storable and widely acceptable as bio friendly particularly in developing countries. Oral administration of edible vaccines proves to be promising agents for reducing the incidence of various diseases like hepatitis and diarrhea especially in the developing world, which face the problem of storing and administering vaccines.

Edible vaccines are obtained by:

incorporating a particular gene of interest into the plant, which produces the desirable encoded protein. Edible vaccines are specific to provide mucosal activity along with systemic immunity. Various foods that are used as alternative agents for injectable vaccines include cereals (wheat, rice, corn) fruits (bananas) and vegetables (lettuce, potatoes, tomatoes). Thus, edible

vaccines overcome all the problems associated with traditional vaccines and prove to be best substitutes to traditional vaccines.



Advantages of Edible Vaccines

1-Edible vaccines have efficient mode of action for immunization, as they do not require subsidiary elements to stimulate immune response.

2-Edible vaccine unlike traditional vaccines brings forth mucosal immunity.

3-Edible vaccines are comparatively cost effective, as they do not require cold chain storage like traditional vaccines [9].

4-Edible vaccines offer greater storage opportunities as they seeds of transgenic plants contain lesser moisture content and can be easily dried. In addition, plants with oil or their aqueous extracts possess more storage opportunities [10].

5-Edible vaccines do not need sophisticated equipments and machines as they could be easily grown on rich soils and the method is economical compared to cell culture grown in fermenters.

6-Edible vaccines are widely accepted as they are orally administered unlike traditional vaccines that are injectable. Thus, they eliminate the requirement of trained medical personnel and the risk of contamination is reduced as they do not need premises and manufacturing area to be sterilized [11].

7-Edible vaccines offer greater opportunity for second-generation vaccines by integrating numerous antigens, which approach M cells simultaneously

8-Edible vaccines are safe as they do not contain heat-killed pathogens and hence do not present any risk of proteins to reform into infectious organism.

Edible vaccine production process can be scaled up rapidly by breeding