Pharmaceutical Biotechnology

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INTRODUCTION

- Pharmaceutical biotechnology consist of the combination of two branches which Are “PHARMACEUTICAL SCIENCE” AND “BIOTECHNOLOGY”

DEFINATION:

- PHARMACEUTICAL SCIENCE: Can simply be define as the branch of science that deals with the formulation compounding and dispensing of drugs
- BIOTECHNOLOGY: Can simply be define as the application of biological system, living organisms, or their derivatives in making or modifying products or processes for specific use.

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- PHARMACEUTICAL BIOTECHNOLOGY :Can simply be define as the science that covers all technologies required for the production, manufacturing and registration of biological drugs. The aim of this pharmaceutical biotechnology is to design, produce drugs that are adapted to each persons genetic make up, which can give the maximum therapeutic effect. Biotechnology plays an important role in pharmaceutical science most especially in the pharmaceutical industries by creation of genetically modified organisms that can be used in industrial production.

PRODUCTS

- COMMON PHARMACEUTICAL BIOTECHNOLOGICAL PRODUCT –

  The common pharmaceutical biotechnology products that are made by the biotech pharmaceutical companies includes:

*Antibodies

*Proteins

*Recombinant DNA Products.

ANTIBODIES

Antibodies: Antibodies are proteins that are produced by white blood cells and are used by the immune system to identify bacteria, viruses, and other foreign substances and to fight them off. In the recent years, monoclonal antibodies are one of the most exciting developments in biotechnology pharmaceuticals.

Example: Actinin Alpha monoclonal Antibodies,

Actin smooth muscle monoclonal antibodies etc.

PROTIENS

- Proteins: Proteins, made of amino acids are large, complex molecules that do most of the work in cells and are required for the structure, function, and regulation of the body's tissues and organs. Protein biotechnology is emerging as one of the key technologies of the future for understanding the development of many diseases like cancer or a myloid formation for better therapeutic intervention.

RECOMBINANT DNA PRODUCT

- Recombinant DNA Products: Recombinant Deoxyribonucleic Acid is the genetically engineered DNA created by recombining fragments of DNA from different organisms. Some of the Recombinant DNA Products includes:

*Recombinant DNA Vaccines
*Recombinant DNA Drugs
*Recombinant DNA Enzymes
*Recombinant DNA Growth Hormone
*Recombinant DNA Insulin
*Recombinant DNA Proteins
*Recombinant DNA Yeast

RECOMBINANT DNA VACCINE

A recombinant vaccine is a vaccine produced through recombinant DNA technology. This involves inserting the DNA encoding an antigen (such as a bacterial surface protein) that stimulates an immune response into bacterial or mammalian cells, expressing the antigen in these cells and then purifying it from them.

Example:- Hepatitis B infection is controlled through the use of a recombinant hepatitis B vaccine

Important biotechnology drugs and vaccine

Generic name	Product name	Name of company	Year of discovery
Human insulin	humulin	Eli Lilly	1982
sometrem	protropin	Genetech	1985
Digoxin Immune Fab	digibind	Burrough well come	1986
Interferon- α-2a	Roferon-A	Hoffman –La- roche	1986
Interferon-α-2b	Intron-A	Schering-Plough	1986
Hepatitis-B vaccine	Recombivax-HB	Merk	1986
somatotropin	humatrope	Eli Lilly	1987
Haemophilus- B conjugate vaccine	Hib titer	Praxis biologics	1988
Hepatitis –B vaccine	Engerix -B	Smithkline Beecham	1989
Interferon-Y-Ib	actimmune	Genetech	1990