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| Diploma in Pharmacy 2nd Year<br>Pharmacology<br>Important Questions<br>Chapter 13 : Biologicals | |
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# Chapter 13
# Biologicals
# IMPORTANT Questions

**Q1. Describe the term Biologicals.**

**Ans.**

## Biologicals

- Biological , biopharmaceuticals or biologics are substances (medicinal products) made from a living organism or contain components of living organism . e.g. Vaccines , blood , hormones etc.
- Biologicals include a wide variety of products derived from human , animal or microorganism by using biotechnology.
- Biological products may contain proteins that control the function of other proteins , cellular process and gene which regulate the production of vital proteins.
- Biologics may content modified human hormones or cells which produce the substances that suppress or activate the immune system.

**Q2. Write the types of Biologicals.**

**Ans.**

## Types of Biologicals

- **Proteins :** Examples include insulin for diabetes and erythropoietin for anemia.
- **Vaccines :** These are used to prevent the spread of infectious diseases.
- **Gene therapies :** These involve the introduction of a functional gene into a patient's cells to treat genetic disorders.
- **Monoclonal antibodies :** These are laboratory-made molecules that mimic the immune system's ability to fight off harmful substances.
- **Cell therapies :** These involve the transplantation of living cells into a patient's body to treat diseases or conditions.
- **Toxoids :** These are toxins that have been made harmless and used as vaccines against certain bacterial diseases.
- **Fusion proteins :** These are made by combining two different proteins to treat diseases such as arthritis and cancer.
- **Recombinant DNA products :** These are produced using genetic engineering techniques and used to treat a range of conditions, including hemophilia and growth hormone deficiencies.

**Q3. Write the Indication of Biological Agents with examples?**

**Ans.**

# Indications of biological agents with examples:

1. **Cancer:**
   - Monoclonal antibodies such as trastuzumab (Herceptin) are used to treat breast cancer.
   - Cell therapies such as chimeric antigen receptor T cell (CAR-T) therapy are used to treat certain types of blood cancers.
2. **Autoimmune disorders :**
   - Monoclonal antibodies such as adalimumab (Humira) are used to treat rheumatoid arthritis.
   - Fusion proteins such as etanercept (Enbrel) are used to treat psoriatic arthritis and ankylosing spondylitis
3. **Infectious diseases :**
   - Vaccines such as HPV vaccine and influenza vaccine are used to prevent the spread of the respective diseases.
   - Monoclonal antibodies such as infliximab (Remicade) are used to treat viral infections such as hepatitis B and C
4. **Hormonal deficiencies :**
   - Recombinant DNA products such as human growth hormone (HGH) are used to treat growth hormone deficiency.
   - Insulin is used to treat diabetes.
5. **Genetic disorders:**
   - Gene therapies such as lentiviral vector gene therapy are used to treat severe combined immunodeficiency.
   - Stem cell transplantation is used to treat genetic blood disorders such as sickle cell anemia.
6. **Neurological disorders :**
   - Monoclonal antibodies such as ocrelizumab (Ocrevus) are used to treat multiple sclerosis.
7. **Inflammatory disorders :**
   - Fusion proteins such as infliximab (Remicade) are used to treat inflammatory bowel diseases such as Crohn's disease and ulcerative colitis.
8. **Allergic conditions :**
   - Monoclonal antibodies such as omalizumab (Xolair) are used to treat severe asthma and allergic rhinitis.