

UNIT – 5

a. Androgens and Anabolic Steroids:

1. Androgens:

- **Examples:** Testosterone, Dihydrotestosterone (DHT).
- **Functions:** Development of male sex organs, maintenance of male secondary sexual characteristics, and promotion of protein synthesis.

2. Anabolic Steroids:

- **Examples:** Nandrolone, Oxandrolone.
- **Functions:** Increase muscle mass, bone density, and erythropoiesis.

b. Estrogens, Progesterone, and Oral Contraceptives:

1. Estrogens:

- **Examples:** Ethinyl estradiol.
- **Functions:** Development of female sex organs, maintenance of female secondary sexual characteristics.

2. Progesterone:

- **Examples:** Medroxyprogesterone.
- **Functions:** Prepares the uterus for pregnancy, maintains the uterine lining.

3. Oral Contraceptives:

- **Combination Pills:** Contain both estrogen and progesterone to inhibit ovulation.
- **Progestin-Only Pills:** Primarily work by thickening cervical mucus.

c. Drugs Acting on the Uterus:

1. Oxytocics:

- **Examples:** Oxytocin.
- **Functions:** Induce uterine contractions, control postpartum bleeding.

2. Tocolytics:

- **Examples:** Ritodrine.
- **Functions:** Inhibit uterine contractions, used to delay preterm labor.

6. Bioassay:

a. Principles and Applications of Bioassay:

Principles:

1. **Quantitative Measurement:** Bioassays measure the potency of a substance by its effect on living organisms.
2. **Comparison with Standard:** The response of the test substance is compared to a standard preparation of known potency.

Applications:

1. **Potency Determination:** Assessing the strength of drugs or hormones.
2. **Quality Control:** Ensuring consistency in the production of pharmaceuticals.
3. **Research and Development:** Evaluating the effects of new drugs.

b. Types of Bioassay:

1. **Quantal Bioassays:** Determine the potency of a substance based on its effect on a population.
2. **Graded Bioassays:** Measure the intensity of the response in an individual.

c. Bioassay of Various Substances:

1. Insulin:

- **Bioassay Method:** Hypoglycemic activity on fasting animals.
- **Standard:** Standard insulin preparation.

2. Oxytocin:

- **Bioassay Method:** Uterine contraction in pregnant animals.
- **Standard:** Standard oxytocin preparation.

3. Vasopressin:

- **Bioassay Method:** Antidiuretic activity.
- **Standard:** Standard vasopressin preparation.

4. ACTH (Adrenocorticotrophic Hormone):

- **Bioassay Method:** Corticosterone release in adrenalectomized animals.
- **Standard:** Standard ACTH preparation.

5. d-Tubocurarine:

- **Bioassay Method:** Muscle relaxant activity.
- **Standard:** Standard preparation of d-tubocurarine.

6. **Digitalis:**

- **Bioassay Method:** Cardiotonic effect.
- **Standard:** Standard digitalis preparation.

7. **Histamine and 5-HT (Serotonin):**

- **Bioassay Method:** Vasodepressor response.
- **Standard:** Standard histamine or 5-HT preparation.

PHARMACY PEERS