

UNIT – 3

a. Introduction to Autacoids and Classification:

Autacoids: Autacoids are locally produced, short-acting substances that exert physiological effects. They act on nearby cells or the cells that produce them.

Classification:

1. **Histamine:** Released by mast cells.
2. **Serotonin (5-HT):** Synthesized by enterochromaffin cells.
3. **Prostaglandins and Thromboxanes:** Derived from arachidonic acid.
4. **Leukotrienes:** Also derived from arachidonic acid.
5. **Angiotensin, Bradykinin, and Substance P:** Peptide autacoids.

b. Histamine, 5-HT, and Their Antagonists:

Histamine:

- Released during allergic reactions.
- Acts on H1 receptors (smooth muscle contraction, vasodilation) and H2 receptors (gastric acid secretion).

Antagonists:

1. **H1 Antagonists (Antihistamines):** (e.g., cetirizine, diphenhydramine) Used for allergies, motion sickness.
2. **H2 Antagonists:** (e.g., cimetidine) Used to reduce gastric acid secretion.

5-HT (Serotonin):

- Involved in mood regulation, GI function, and blood clotting.

Antagonists:

1. **Selective Serotonin Reuptake Inhibitors (SSRIs):** (e.g., fluoxetine) Treat depression.
2. **5-HT3 Antagonists:** (e.g., ondansetron) Used for nausea and vomiting.

c. Prostaglandins, Thromboxanes, and Leukotrienes:

Prostaglandins and Thromboxanes:

- Derived from arachidonic acid.
- Prostaglandins have diverse effects (inflammation, pain, fever).
- Thromboxanes are involved in platelet aggregation.

Leukotrienes:

- Mediate inflammation and bronchoconstriction.

d. Angiotensin, Bradykinin, and Substance P:

Angiotensin:

- Part of the renin-angiotensin-aldosterone system, regulating blood pressure.
- Angiotensin II is a potent vasoconstrictor.

Bradykinin:

- Causes vasodilation, increased vascular permeability, and pain.

Substance P:

- Acts as a neurotransmitter and neuromodulator.
- Involved in pain perception and inflammation.

e. Non-Steroidal Anti-Inflammatory Agents (NSAIDs):

NSAIDs:

- Reduce inflammation, pain, and fever by inhibiting cyclooxygenase (COX) enzymes.
- Include aspirin, ibuprofen, and naproxen.

Adverse Effects:

- Gastrointestinal irritation, renal impairment, increased bleeding risk.

f. Anti-Gout Drugs:

Gout:

- Inflammatory arthritis caused by elevated uric acid levels.

Anti-Gout Drugs:

1. **Colchicine:** Reduces inflammation and pain.
2. **Allopurinol:** Inhibits uric acid synthesis.
3. **Probenecid:** Increases uric acid excretion.

g. Antirheumatic Drugs:

Rheumatoid Arthritis:

- Autoimmune disease causing joint inflammation.

Antirheumatic Drugs:

1. **Disease-Modifying Anti-Rheumatic Drugs (DMARDs):** (e.g., methotrexate) Suppress the immune system.
2. **Biological DMARDs:** (e.g., infliximab) Target specific immune pathways.