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Diploma in Pharmacy 2nd Year Pharmacology Important Questions Chapter 11 : Autocoids	
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Chapter 11
Autocoids
IMPORTANT Questions

Q1. Define and Classify the Autocoids.

Ans.

Autocoids

- Autacoids. Autacoids from the Greek autos ("self") and akos ("cure") are endogenous organic molecules with potent pharmacologic effects, that are not part of traditional immune or autonomic groups. Histamine and serotonin (5-hydroxytryptamine) are two important amine autacoids.
- Autocoids are chemical signals produced by different cells of the body.
- They act locally at the site where they are synthesised and released (eg, at the site of inflammation within the inflaminatory pockets).
- Autocoids are chemical substances that are produced within the cells and are released in response to different stimuli to cause various physiological actions.
- Mostly the action of autocoids is localised bat large amounts of them can be transported through circulation to exert their effects at sites, other than where, they are synthesised. Since autacoids act locally, they are also described as local hormones

Classification

- **Amines :** Histamine*, Serotonin*
- **Polypeptides :** kinins, angiotensin,
- **Lipids** : Prostaglandines, Leukotriens, Thromboxanes

Q2. Discuess the note y Histamine & Anti-Histamines.

Ans.

Histamine

- Histamine is a signaling molecule, sending messages between cells. It tells stomach cells to make stomach acid. And it helps our brain stay awake.

Physiological Roles

1. On CNS : Stimulates sensory neuron and give a feeling of itching , and other senses.
2. On CVS :
   - ♣ Dilation of blood vessels.
   - ♣ Increases permeability of capillaries.

♣ Histamine shock : large amount of histamine causes too much vasodilation and causes death.

♣ Increases contraction force of heart.

3. Inflammation and Allergic reaction : when antigen interacts with IGE antibody present on the mast cell surface , the mast cell releases histamine which causes inflammation and allergic reaction.

4. Gastric Acid Secretion : H2 receptor present in gastric mucosa and when histamine binds with it , it stimulates acid secretion.

Antihistamines

→ Antihistamines are drugs that block the effects of histamine, a chemical released in the body during an allergic reaction.

→ They are used to treat symptoms such as itching, runny nose, watery eyes, and sneezing caused by allergies, hay fever, and the common cold. Some common examples of antihistamines include diphenhydramine (Benadryl), loratadine (Claritin), and cetirizine (Zyrtec).

→ Antihistamines are available over-the-counter and by prescription and can cause drowsiness in some people.

Following are the three types of histamine receptor antagonists :

1. **H-Antagonists :** These are classical antihistamines blocking the physiological effects of histamine and used in allergic disorders.
2. **H-Antagonists :** Cimetidine, Ranitidine and Famotidine are H-antagonists reducing gastric HCI secretion and used in peptic ulcer diseases.
3. **H-Antagonists :** Thioperamide an H-antagonist regulates histamine release from histaminergic neurons of CNS by presynaptic auto-regulatory mechanism. It is not recommended to be used therapeutically.

Clinical uses

- Antihistamines are used to relieve or prevent the symptoms of hay fever and other types of allergy.
- They work by preventing the effects of a substance called histamine, which is produced by the body.
- Histamine can cause itching, sneezing, runny nose, and watery eyes.

Adverse effects

- Sleepiness (drowsiness) and reduced co-ordination, reaction speed and judgement – do not drive or use machinery after taking these antihistamines. dry mouth. blurred vision. difficulty peeing.

Q3. Describe the term

5HT (Serotonin)
5-HT Antagonists
Prostaglandins

Ans.

5HT (Serotonin)

→ 5HT (5HydroxyTryptamine is an important neurotransmitter , it is synthesised by amine acid Tryptophan.

→ It is widely found in animal and plant , High concentration of 5HT is found in intestine , platelets and brain.

Physiological Roles

1. **On CVS :** It shows a complex action on CVS which depends on dose injected .
   - **On blood vessels :** In starting induces vasoconstriction but later induces vasodialation.
   - **On Heart :** It induces a positive chronotropic effect (Increases heart rate) and positive inotropic effect is also seen.
   - **On blood pressure :** Its action on BP is complex . It may either cause hypotension or hypertension.
2. **Action on Smooth Muscles :** It causes contraction of intestine bronchi , and uterus .
3. **On Digestive System :** It increases intestinal motility , and induces Emesis (vomiting)
4. **On Lungs :** It causes contraction of bronchi .
5. **Uterus :** It increases contraction of Uterus .
6. **On CNS :**
   - It regulates the sleep , mood and appetite .
   - **Migraine :** Contraction and relaxation of brain vessels due to 5-HT causes a repeated and severe pain .
7. **Allergic and Inflammatory actions :** It involves in allergic and Inflammatory reactions

5-HT Antagonists

→ 5-HT receptor antagonists (also called serotonin receptor antagonists or serotonin blockers) are a class of medicines that are used for the prevention and treatment of nausea and vomiting, particularly that caused by chemotherapy, radiation therapy, or postoperatively.

Classification

- Cyproheptadine,
- Ketanserin,
- Ondansetron,
- Granisetron,
- Clozapine,
- Olenzapine etc.

Clinical uses

- **Cyproheptadine**
  - It is used in skin allergy like pruritis and urticaria .
  - It is used to treat Carcinoid tumor(slow growing tumor at any part of the body) it is used to treat Migraine
- **Ketanserin :** It is used as antihypertensive drug , it dilates blood vessels .
- Ondansetron and Granisetron these are used as anti-emetics
- Clozapine , Olenzapine , Resperidone these are used as antipsychotics .

Adverse effects

- Dry mouth
- Drowsiness
- Weight gain .

Prostaglandins

→ Prostaglandins are a group of naturally occurring lipids that play important roles in various physiological processes.

→ They are derived from the essential fatty acid arachidonic acid and are produced by many tissues in the body, including the lining of the stomach, blood vessels, and reproductive tract.

Physiological Roles

1) **GI Tract :** PGE2 and PGI2 reduce acid secretion and increase the secretion of mucus in the stomach . Misoprostol , Rantidine are used to prevent ulcer due to NSAIDs .
2) **Cardiovascular System** : PGD2 , PGE2 and PGI2 cause vasodilation , PGF 2α Constricts pulmonary veins and arteries . TXA 2 is a Vasoconstrictor .
3) **Platelets :** PGI2 inhibits platelet aggregation . It is used during Haemodialysis to prevent platelets aggregation .
4) **Eye :** PGF2α decreases the ocular pressure . Its analogues are used in glaucoma e.g. Latanoprost , Bimatoprost etc.
5) **Uterus :** PGE2 (low concentration) and PGF 2α Contract Pregnant Uterus , PGs are commonly used for abortion . They can used for Induction of labour .
6) **Male reproductive system :** PGE1 is useful in the treatment of erectile dysfunction . e.g. alprostadil

Clinical Uses

- Abortion
- Induction of labour
- PPH : To treat postpartum hemorrhage (excessive bleeding after childbirth) e.g. Carboprost (i.m.) Misoprost (oral)

Adverse effects

- Nausea,
- Vomiting,
- diarrhoea,
- fever,
- lushing (reddening of skin), hypotension etc.