

Drugs Against Bowel Dysfunction

Pharmaceutical Chemistry IV

PHA 482

DIARRHOEA

- Loose bowel movements resulting into the frequent passage of watery, uniformed stools with or without mucous and blood.

Classification:

Osmotic diarrhoea

Something in the bowel draws water from the body into the bowel.

Eg; Sorbitol is not absorbed by the body but draws water from the body into the bowel, resulting in diarrhoea.

Secretory diarrhoea

Occurs when the body is releasing water into the bowel, many infections, drugs causes secretory diarrhoea.

Exudative diarrhoea

Diarrhoea with the presence of blood and pus in the stool. This occurs with inflammatory bowels disease (IBD), such as Crohn's disease or ulcerative colitis etc.

Acute diarrhoea

- Sudden onset in a previously healthy person
- Lasts from 3 days to 2 weeks
- Self-limiting
- Resolves without sequels

Chronic diarrhoea

- Lasts for more than 3 weeks.
- Associated with recurring passage of diarrhoeal stools, fever, loss of appetite, nausea, vomiting, weight loss, and chronic weakness

CAUSES OF DIARRHOEA

Acute Diarrhoea

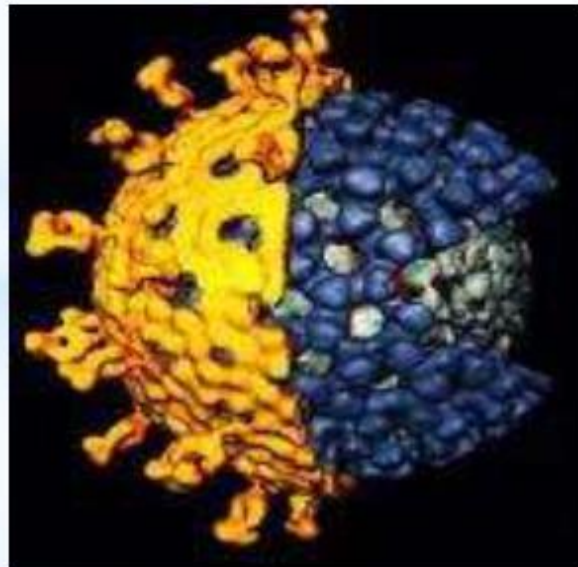
Microbes

Drug induced

Nutritional



E. Coli bacteria



Rotavirus

Chronic Diarrhoea

Tumours

Diabetes

Addison's disease

Hyperthyroidism

Irritable bowel syndrome

Anti secretory drugs

- Agents which reduce the secretion
- Decrease intestinal muscle tone and peristalsis of GI tract

Result: slowing the movement of faecal matter through the GI tract

Examples: belladonna alkaloids, atropine, sulphasalazine, hyoscyamine

Side effects

- Urinary retention, impotence
- Headache, dizziness, confusion, anxiety, drowsiness
- Dry skin, rash, flushing
- Blurred vision, photophobia, increased intraocular pressure
- Hypotension, hypertension, bradycardia, tachycardia

Antimotility drugs

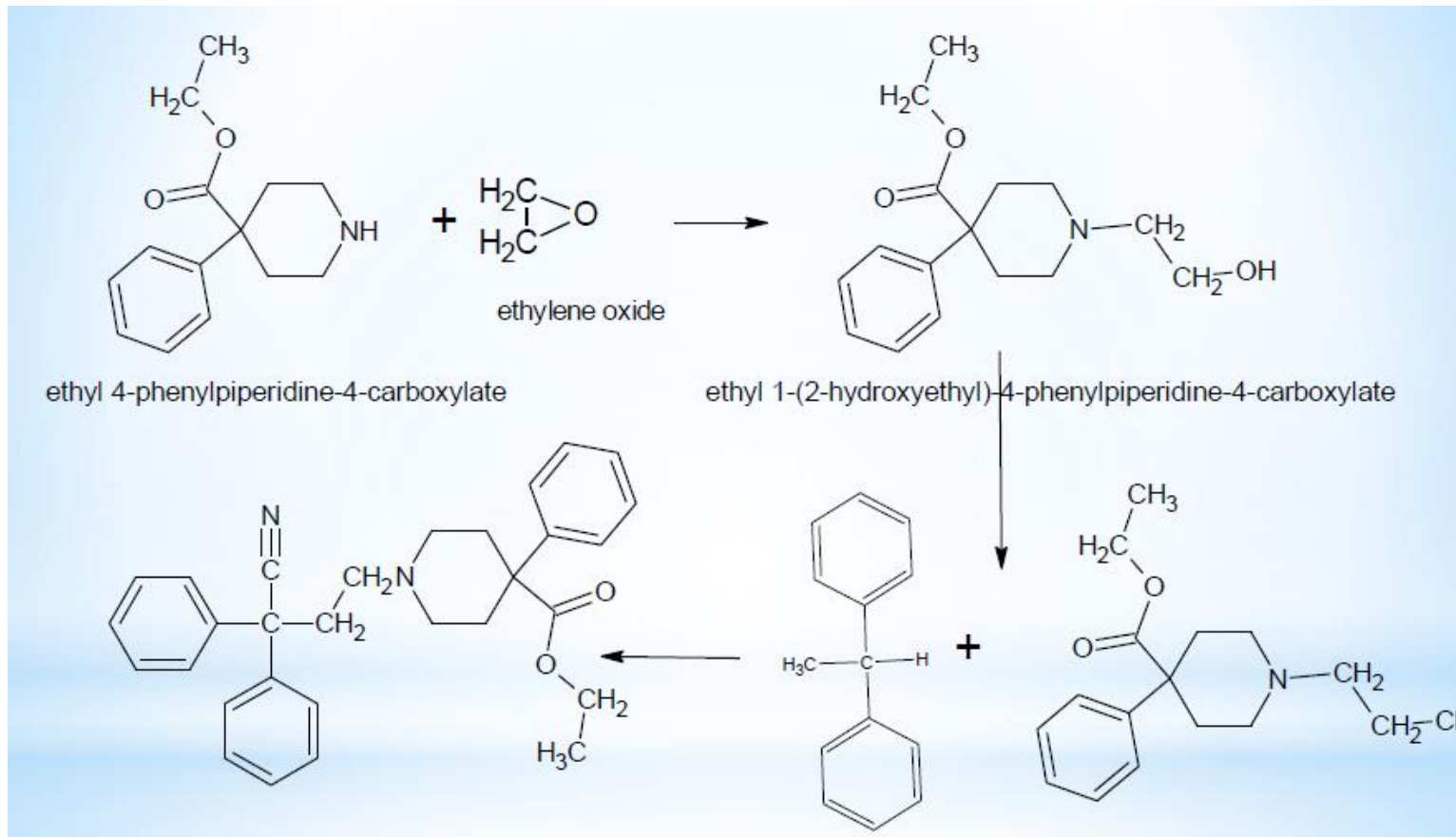
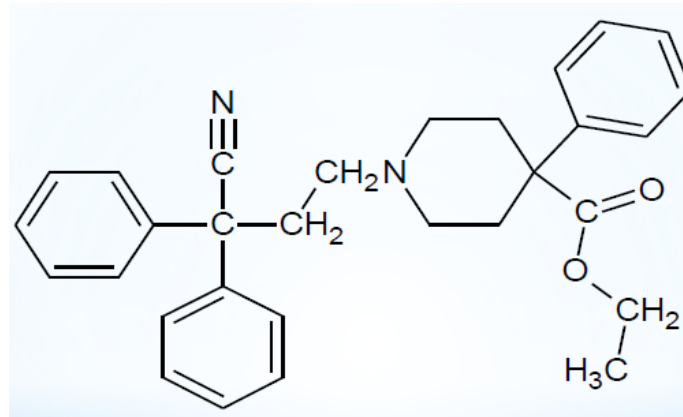
- Decrease bowel motility and relieve rectal spasms
- Decrease transit time through the bowel, allowing more time for water and electrolytes to be absorbed

Examples: codeine, loperamide, diphenoxylate

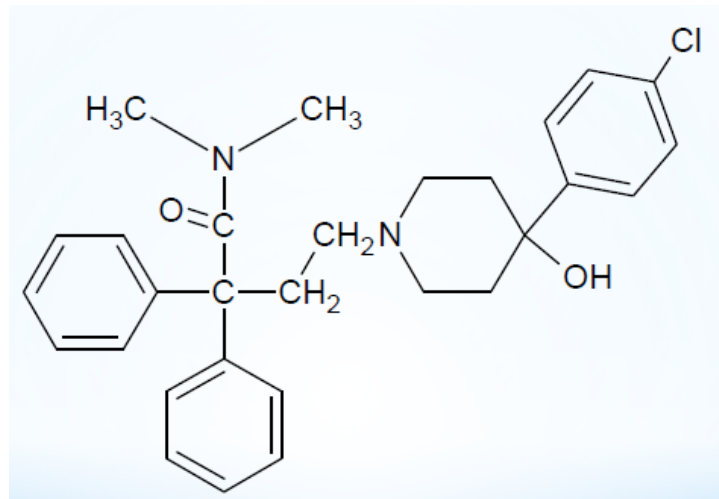
Side effects

- Drowsiness, sedation, dizziness, lethargy
- Nausea, vomiting, anorexia, constipation
- Respiratory depression
- Bradycardia, palpitations, hypotension
- Urinary retention
- Flushing, rash, urticaria

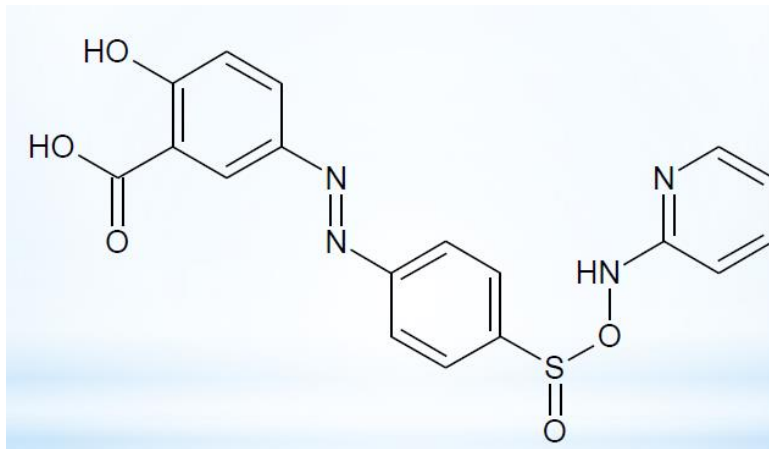
Diphenoxylate HCl



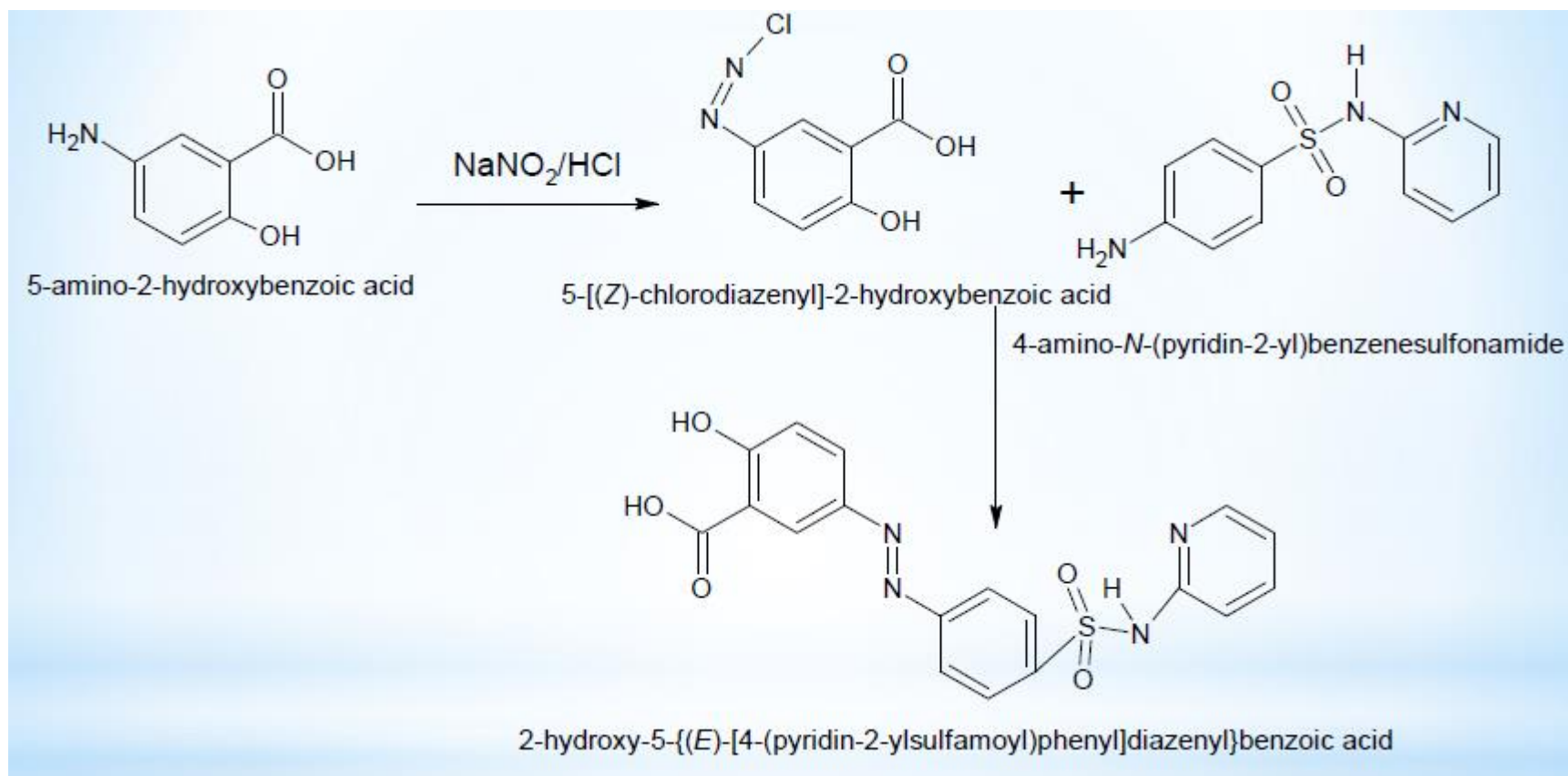
LOPERAMIDE



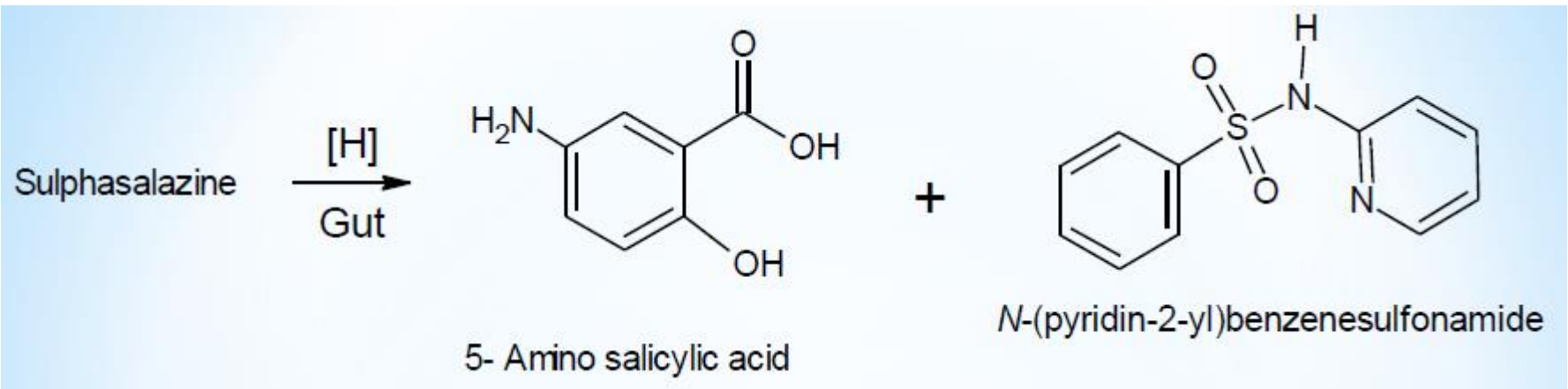
SULPHASALAZINE



Synthesis of Sulphasalazine



Metabolism of Sulphasalazine



- Prodrug, having low solubility and poorly absorbed from ileum.
- The azo bond split by colon bacteria into Sulfapyridine and 5-amino salicylic acid.
- Blocks cyclooxygenase and lipoxygenase pathway and reduce mucosal secretion.