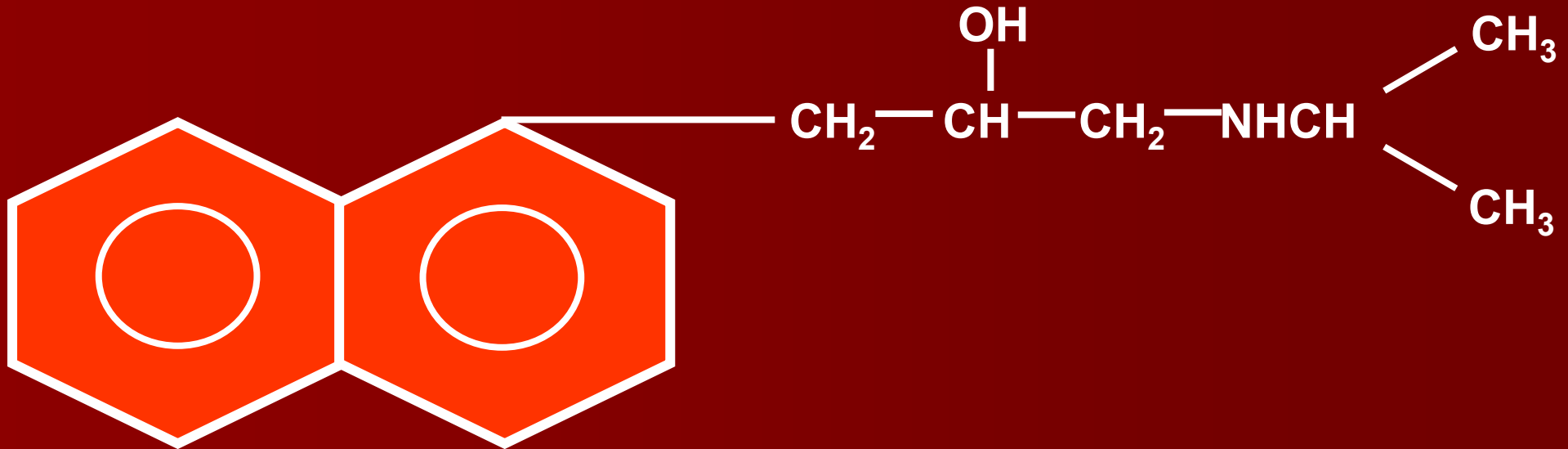
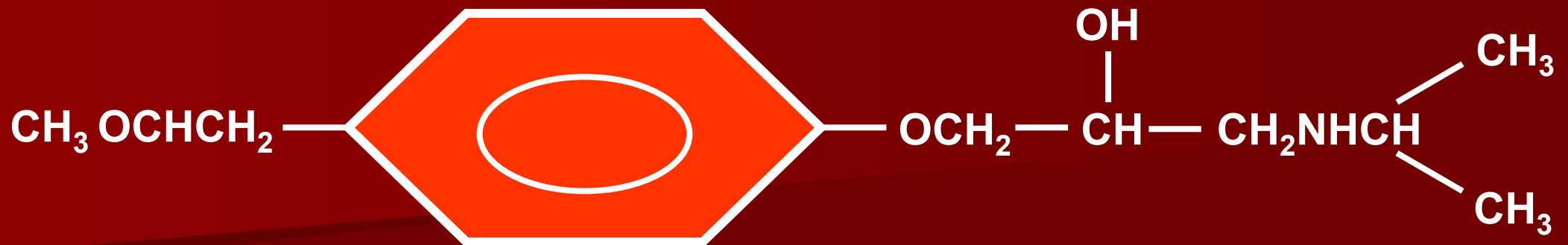


BETA ADRENOCEPTOR BLOCKERS



PROPRANOLOL



METOPROLOL

CLASSIFICATION OF BETA BLOCKERS

➤ NON - SELECTIVE (β_1, β_2) BLOCKERS

◆ **PURE BLOCKERS**

- ❖ SOTALOL
- ❖ TIMOLOL
- ❖ NADOLOL

◆ **WITH MEMBRANE STABILIZING ACTIVITY (MSA)**

- ❖ PROPRANOLOL

◆ **WITH INTRINSIC SYMPATHETIC ACTIVITY (ISA)**

- ❖ PINDOLOL (MSA $\pm$)
- ❖ CARTEOLOL
- ❖ PENPUTALOL

◆ **WITH ISA & MSA**

- ❖ OXPRENLOLOL



CARDIOSELECTIVE (β_1) BLOCKERS

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◆ **PURE BLOCKERS**

- ❖ ATENOLOL
- ❖ BISOPROLOL
- ❖ ESMOLOL

◆ **WITH MSA**

- ❖ METOPROLOL
- ❖ TOLAMOLOL

◆ **WITH ISA**

- ❖ PRACTOLOL (Clinically not used now)
- ❖ CELIPROLOL

◆ **WITH ISA & MSA**

- ❖ ACEBUTOLOL



DRUG THAT BLOCK BOTH α & β RECEPTORS

- ❖ LABETALOL
- ❖ CARVEDILOL
- ❖ BUCINDOLOL

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BETA ADRENOCEPTOR BLOCKERS **PHARMACOKINETIC PROPERTIES**

LIPID/WATER SOLUBILITY

LIPID SOLUBLE

PROPRANOLOL

TIMOLOL

METOPROLOL

PENBUTOLOL

WATER SOLUBLE

NADOLOL

ATENOLOL

ACEBUTOLOL

DURATION OF ACTION

ULTRA SHORT ACTING

ESMOLOL

Half Life

9 Minutes

INTERMEDIATE ACTING

PROPRANOLOL

3 - 5 HOURS

TIMOLOL

3 - 5 HOURS

PINDOLOL

3 - 4 HOURS

METOPROLOL

3 - 4 HOURS

LONG ACTING

NADOLOL

10 - 20 HOURS

ATENOLOL

5 - 8 HOURS

BISOPROLOL

11 - 17 HOURS

Pharmacological effects

- CVS
- Respiratory system
- Kidney
- Metabolic effects
- CNS
- Peripheral nervous system
- Eye
- Ankle jerk

THERAPEUTIC USES OF BETA ADRENOCEPTOR BLOCKERS

◆ **CARDIOVASCULAR DISEASES**

- **Hypertension (Cardio-protective)**
- **Angina pectoris (Prophylaxis)**
- **Myocardial infarction**
 - ❖ **Primary prevention**
 - ❖ **Limit the size of infarct**
 - ❖ **Secondary prevention**
- **Cardiac arrhythmias**
- **Congestive Cardiac Failure**

Beta1 selective e.g. Metoprolol & Bisoprolol

Non selective e.g. carvedolol

(Contd)

- **Obstructive Cardiomyopathies**
 - ❖ **Hypertrophic sub aortic stenosis**
 - ❖ **Fallot's tetralogy**
- **Dissecting aneurysm of aorta**
- **Portal hypertension**
- **Sub arachnoid hemorrhage**

◆ CONDITIONS ASSOCIATED WITH SYMPATHETIC OVER-ACTIVITY

- Thyrotoxicosis
- Acute anxiety states (Panic syndromes)
- Childhood phobias
- Acute porphyria
- Drug withdrawal syndrome
- Pheochromocytoma (alongwith alpha blockers)

◆ Miscellaneous

- Glaucoma (Simple open angle)
Levobunolol, Betaxolol, Timolol
- Migraine (Prophylaxis)
- Familial Tremors

ADVERSE EFFECTS

■ CVS

Cardio depression, Bradycardia,
Heart Blocks, Cardiac Failure
Cold extremities, Worsening of Peripheral
Vascular Disease

■ RESPIRATION

Bronchospasm

■ CNS

Sleep disturbances, Nightmares

■ METABOLIC

Masking of Hypoglycemia
Increased TGs, Reduced HDL

■ Male Sexual Dysfunction

■ Rashes, Diarrhoea, Muscle cramps

■ Oculomucocutaneous syndrome- practolol

DRUGS INTERACTIONS

- Enzyme inhibitors – Cimetidine
- Chlorpromazine, hydralazine, furesimide
- Enzyme inducers
- Sympathomimetics
- Prazosin
- Clonidine
- Lignocaine
- Calcium channel blockers
- NSAIDs e.g. Indomethacin
- Antihypertensives

TREATMENT OF OVERDOSAGE

- Atropine
- Beta adrenoceptor agonists e.g.
isoprenaline, dobutamine, dopamine
- Glucagon

CONTRAINDICATIONS