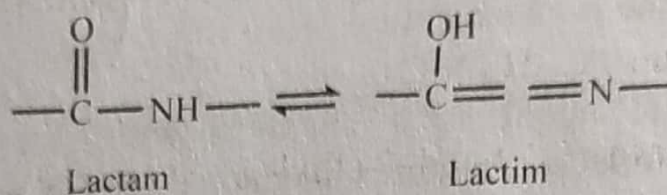


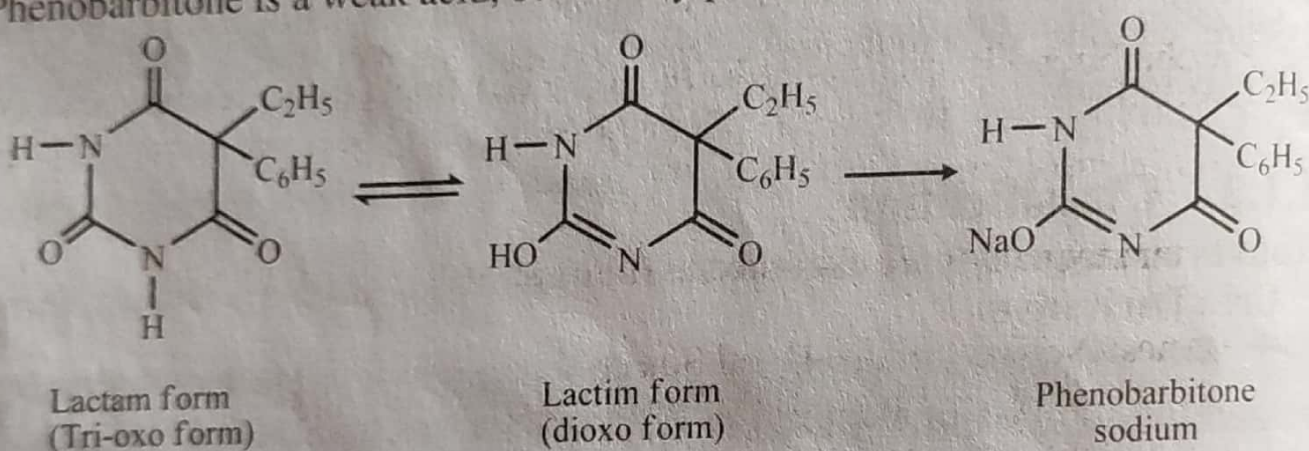
### 11.1.3.1. Phenobarbitone

Phenobarbitone is a barbituric acid derivative and a non-selective CNS depressant.

Phenobarbitone is a derivative of barbituric acid (a cyclic diureide), hexahydropyrimidine-2,4,6-trione, which contains ethyl and phenyl groups at C5. It is acidic because of lactam-lactim tautomerisation.

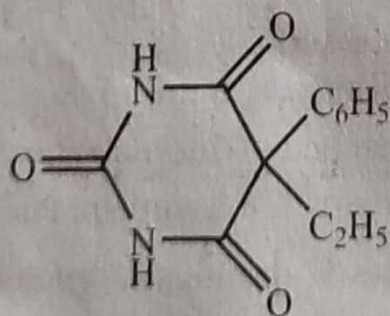


The enolic hydroxyl group separates in aqueous medium to release proton. Phenobarbitone is a weak acid, but readily produces salts with alkali hydroxides.



Phenobarbitone is a long acting barbiturate and lipophilic in nature; therefore, it can penetrate blood-brain barrier and show hypnotic-sedative (CNS depressant) activity.

#### Chemical Structure



**Molecular Formula:** C<sub>12</sub>H<sub>12</sub>N<sub>2</sub>O<sub>3</sub>

**IUPAC Nomenclature:** 5-ethyl-5-phenyl-1,3-diazinane-2,4,6-trione

**Properties:** Phenobarbitone occurs as a hygroscopic white coloured crystalline powder with no odour and a slightly bitter taste. It is readily soluble in water; and soluble in alcohol.



**Uses:** Phenobarbitone is used as a sedative, hypnotic, and antiepileptic. It is useful in nervous and associated tension states. It is also used in symptomatic therapy of epilepsy.

**Stability and Storage Conditions:** Phenobarbitone should be stored at 25°C (room temperature) in air-tight and well-closed containers.

**Types of Pharmaceutical Formulations:** Elixirs, tablets, intravenous and intramuscular injections, and oral solutions.

**Brand Names:** Barbit, Berdinal, Pheno, Phenoson, and Luminal.

### 11.1.3.2. Butobarbitone

Butobarbitone is a barbiturate acting as a sedative and a hypnotic drug.

**Molecular Formula:**  $C_{10}H_{16}N_2O_3$

**IUPAC Nomenclature:** 5-butyl-5-ethyl-1,3-diazinane-2,4,6-trione

**Properties:** Butobarbitone occurs as a white solid, which is soluble in acetonitrile and methanol. Its solubility in water is 1.27 mg/ml.

**Uses:** Butobarbitone is used as mild sedative and hypnotic to relieve anxiety, nervous tension, and insomnia. Sometimes it is used as adjuvants in psychosomatic disorders.

**Type of Pharmaceutical Formulation:** Tablets

**Brand Names:** Neonal, Butethal, and Soneryl.

### 11.1.3.3. Cyclobarbitone

Cyclobarbitone (or cyclobarbital) is a barbiturate used as a sedative and hypnotic in combination with diazepam.

**Molecular Formula:**  $C_{12}H_{16}N_2O_3$

**IUPAC Nomenclature:** 5-(cyclohexen-1-yl)-5-ethyl-1,3-diazinane-2,4,6-trione

**Properties:** Cyclobarbitone occurs as a slightly yellowish crystalline powder with a bitter taste. It is insoluble in alcohol; and slightly soluble in water.

**Uses:** Cyclobarbitone is used as a sedative and hypnotic.

**Type of Pharmaceutical Formulation:** Tablet.

**Brand Name:** Reladorm.

### 11.1.3.4. Nitrazepam

Nitrazepam is a benzodiazepine derivative used as an anticonvulsant and hypnotic.

**Molecular Formula:**  $C_{15}H_{11}N_3O_3$

**IUPAC Nomenclature:** 7-nitro-5-phenyl-1,3-dihydro-1,4-benzodiazepin-2-one

**Properties:** Nitrazepam is a yellow coloured crystalline powder with no odour. It is slightly soluble in alcohol, acetone, chloroform, and ethylacetate; and insoluble in water, hexane, ether, and benzene.

**Uses:** Nitrazepam is used for treating short-term insomnia, such as trouble in falling asleep, frequent awakenings in night, and early-morning awakening.

**Stability and Storage Conditions:** Nitrazepam should be stored away from light in well-closed air-tight containers.

**Types of Pharmaceutical Formulations:** Tablets and suspensions.

**Brand Names:** Dormin, Nipam, and Nitorsun.