



SNS COLLEGE OF ALLIED HEALTH SCIENCES

SNS Kalvi Nagar, Coimbatore - 35

Affiliated to Dr MGR Medical University, Chennai



**DEPARTMENT : OPERATION THEATRE AND ANAESTHESIA
TECHNOLOGY**

COURSE NAME : PHARMACOLOGY

UNIT : INDUCTION AGENT

**TOPICS : THIOPENTONE, DIAZEPAM, MIDAZOLAM,
KETAMINE, PROPOFOL, ETOMIDATE**



INDUCTION AGENT



- An induction agent, in the context of anesthesia, is a medication used to induce a state of unconsciousness in a patient before a medical procedure or surgery.
- The purpose of an induction agent is to facilitate the transition from a conscious and aware state to a state of general anesthesia.



- General anesthesia involves rendering a patient unconscious, immobile, and insensible to pain during a surgical or medical procedure.
- The induction agent is typically administered intravenously, and its selection depends on various factors such as the patient's medical history, the type of procedure, and the preferences of the anesthesia provider.



- The induction agent works by depressing the central nervous system, particularly the brain, to induce a state of unconsciousness quickly and safely.



THIOPENTONE



Class:

Thiopentone is a barbiturate, specifically an ultra-short-acting barbiturate.

Mechanism of Action:

It acts by enhancing the inhibitory neurotransmission mediated by gamma-aminobutyric acid (GABA) in the central nervous system.



Clinical Use:

Primarily used for induction of anesthesia, especially in rapid-sequence induction for surgeries or procedures requiring a quick onset of action.

Pharmacokinetics:

Rapid onset of action and short duration of action due to rapid redistribution from the brain to other tissues.



Adverse Effects:

- Respiratory depression, hypotension, and injection site reactions are possible.
- Prolonged use can lead to drug dependence.



DIAZEPAM



Class: Diazepam is a benzodiazepine.

Mechanism of Action: Acts on the GABA-A receptors, increasing the inhibitory effect of GABA.

Clinical Use: Commonly used for preoperative sedation, anxiolysis, and as an anticonvulsant.



Pharmacokinetics:

Has a slower onset but a longer duration of action compared to Thiopentone. Metabolized in the liver to active metabolites.

Adverse Effects:

Can cause respiratory depression, hypotension, and paradoxical reactions. It has a potential for dependence and withdrawal symptoms.



MIDAZOLAM



Class: Midazolam is a short-acting benzodiazepine.

Mechanism of Action: Similar to diazepam, it enhances the effect of GABA.

Clinical Use: Often used for preoperative sedation, induction of anesthesia, and conscious sedation.



Pharmacokinetics:

Rapid onset and shorter duration of action compared to diazepam. Metabolized in the liver.

Adverse Effects:

Can cause respiratory depression, especially when used in combination with other central nervous system depressants.



Pharmacokinetics:

Rapid onset of action and relatively short duration. Metabolized in the liver.

Adverse Effects:

Hallucinations, increased intracranial pressure (ICP), and sympathetic stimulation leading to increased heart rate and blood pressure.



PROPOFOL



Class: Propofol is an intravenous sedative-hypnotic agent.

Mechanism of Action: Enhances the effect of GABA, similar to benzodiazepines.

Clinical Use: Used for induction and maintenance of anesthesia. Also employed for sedation in intensive care units.



Pharmacokinetics:

Rapid onset and short duration of action. Metabolized in the liver.

Adverse Effects:

Respiratory depression, hypotension, and pain at the injection site. Can also cause propofol infusion syndrome with prolonged use.



ETOMIDATE



Class: Etomidate is an imidazole derivative.

Mechanism of Action: Acts on GABA-A receptors, similar to benzodiazepines.

Clinical Use: Primarily used for induction of anesthesia, especially in patients with compromised cardiovascular function.



Pharmacokinetics:

Rapid onset and short duration of action. Metabolized in the liver.

Adverse Effects:

Can cause adrenal suppression, leading to decreased cortisol synthesis. It is associated with pain on injection and may cause myoclonic movements.



ASSESSMENT



- What is the Clinical use of Propofol ?
- What all are the Adverse effects of Diazepam ?