Barbiturates

Thiopental Vs. Phenobarbital

Lab 6

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Overview:

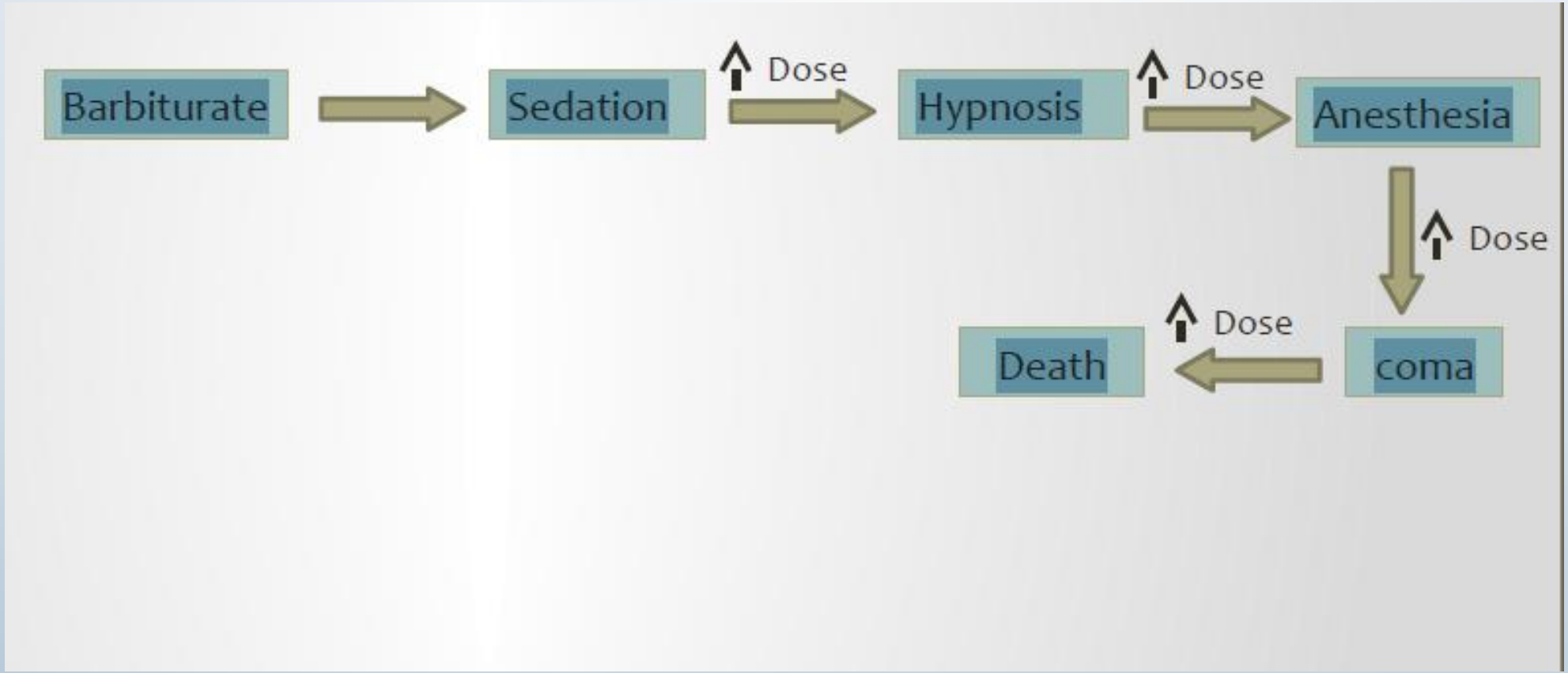
General Anesthesia: Loss of consciousness in addition to loss of sensation

- Analgesia: Loss of sensitivity to pain.
- Sedation: A state of mental calmness, decreased response to environmental stimuli,
- Euthanasia: is the practice of intentionally ending a life to relieve pain and suffering.

Barbiturate

- Class of drugs that act as central nervous system depressants, and can therefore produce a wide spectrum of effects, from mild sedation to total anesthesia
  - • Long acting bartiturates, ex. **Phenobarbitone**
  - • Short acting barbiturates, ex. **Butobarbitone** and **Pentobarbitone**
  - • Ultra short acting barbiturates, ex. **Thiopentane**
- They are also effective as anxiolytics, hypnotics, and anticonvulsants
- Barbiturates also have analgesic effects, however these effects are somewhat weak, preventing barbiturates from being used in surgery in the absence of other analgesics

CNS depressant



Experiment protocol

Six mice are injected with Thiopental (three of them By Sc. route and other three by IP route.

Thiopental dosage form :1 gm vial

Thiopental dose in mice:

Thiopental	30-40 mg/kg IP or Sc.

Six mice are injected with Phenobarbital (three of them By Sc. route and other three by IP route.

Phenobarbital dosage form: 200mg/1ml ampoule

Phenobarbital dose in mice:

Phenobarbital	50-90 mg/kg IP

Calculate Your Dose

- To calculate the correct dose of drug you need to know
  - **The concentration of the drug**
  - **The weight of the animal**
  - **The recommended dose rate of the drug for each specific animal model**

Experimental protocol

- **Parameters**
  - General Activity
  - Characteristics of Breathing
  - **Onset of Sleep (mins)**
  - **Duration of Sleep (mins)**
- Barbiturates are hypnotic drugs
  - Onset of action is the time required to loss the righting reflex
  - Duration of action in mice can be measured by the 'sleeping time' (i.e. the time from the loss of righting reflex to recovery of reflex)

Experimental protocol

- The loss of righting reflex (LORR) assay was used to evaluate sedative/hypnotic effects
- Righting reflex the ability to assume an optimal position when there has been a departure from it
- The onset time of sleep was noted for all animals. After induction of sleep, mice were placed in the inverted position and when sedation was over, the mice came to normal posture and time was noted
- **Record:**
  - LORR was recorded as the time at which the animal was unable to turn itself ***(onset of action)***
  - The time to regain the righting reflex ***(duration of action)***

Results

Group Number	Drug	IP (mouse #1)		Sc (mouse #2)	
		Onset of action (LORR)	Duration of action	Onset of action (LORR)	Duration of action
Subgroup 1	Thiopental				
Subgroup 2	Thiopental				
Subgroup 3	Thiopental				
Subgroup 4	Phenobarbital				
Subgroup 5	Phenobarbital				
Subgroup 6	Phenobarbital				

Thank you