Experiment 1: Study of Local Anaesthetics on Rabbit Eye

Object

Study of local anaesthetics on rabbit eye.

Requirements

Rabbits, rabbit holder, dropper, etc.

Drug

1% Xylocaine

Principle

Local anaesthetics are those drugs which cause reversible loss of the nerve conduction and hence loss of sensory perception of pain when applied locally. An ideal local anaesthetics have the following characteristics:

1. They should not cause irritation
2. Onset of action should be quick
3. Duration of action should be sufficient
4. They should be free from systemic toxicity
5. They should be stable.

Local anaesthetics produce their effect by inhibiting the permeability of sodium ions and hence prevent depolarization. They displace calcium ions from their binding site. Thus, they reduce the rate and rise the action potential and block the conduction of impulses. Lignocaine is used as a surface infiltration, nerve block and spinal anaesthesia. This experiment can detect activity of lignocaine as surface anaesthetic agent. Absence of corneal reflex is indicative of local anaesthetic activity.

Procedure

Select healthy rabbit and place in holder box. Cut off the eye lashes of rabbit at least 24 hours before starting experiment since eye lashes interfere with corneal reflex. Keep right eye as corneal and treat left eye for conducting the experiment. Observe the corneal reflexes in both eyes with a wick of cotton. To test corneal reflex, approach the animal from its side and then touch the cornea with a wick of cotton. If the hand is brought from front, the animal visualizes the hands and closes the eyes. Put 2–3 drops of lignocaine (1%) in left eye and examine the corneal reflex after every one minute. Report the onset and duration of action of xylocaine. The loss of corneal reflex is the indicative of the onset of action of the drug. Positive corneal reflex is the indication of the recovery of corneal sensation.

Result

Onset of action _____ minutes

Duration of action _____ minutes

Observation Table

Time in minute	Corneal reflex	
	Right eye as control	Left eye treated with 1% xylocaine solution
1.	Positive	
2.	Positive	
3.	Positive	
4.	Positive	
5.	Positive	
6.	Positive	
7.	Positive	
8.	Positive	
9.	Positive	
10.	Positive	
11.	Positive	
12.	Positive	
13.	Positive	
14.	Positive	
15.	Positive	

Drug	Trade name	Name of company
Xylocaine	Xylocaine	AstraZeneca

Viva Voce

Q1. What are local anaesthetics?

Q2. Differentiate local anaesthetics and general anaesthetics.

Q3. Write mechanism of action of local anaesthetics.

Q4. Give any 5 examples of local anaesthetics.

Q5. What are positive and negative corneal reflexes?

MCQs

Q1. Which one does not belong to local anaesthetic?

(1) Procaine (2) Cocaine (3) Lignocaine (4) Ethane

Q2 In corneal method of study of local anaesthetics reflex response of test should be:

(1) Positive (2) Negative (3) Both (4) None

Q3. Mechanism of action of local anaesthetics pain stimuli is blocked:

(1) Mechanically (2) Chemically (3) Thermally (4) All of the above

Q4. Mechanism of action of local anaesthetics is at:

(1) CNS level (2) Peripheral level (3) Both (4) None

Q5. Which one belongs to natural local anaesthetics?

(1) Procaine (2) Cocaine (3) Lignocaine (4) Benzocaine

Ans

Q1. (4) **Q2.** (2) **Q3.** (2) **Q4.** (2) **Q5.** (2)