

Experiment No. 11 – Velocity of Nerve Impulse

1. What is saltatory conduction and what are the advantages of saltatory conduction?

Ans: The jumping of nerve impulse from one node of Rannvier to another node of Rannvier in a myelinated nerve fiber is known as Saltatory conduction.

Advantages of saltatory conduction:

- By causing the depolarization process to jump long intervals along the axis of nerve fibers, this mechanism increases transmission in myelinated fibers as much as 50 folds.
- Saltatory conduction conserves energy for the axon because only nodes depolarize.

2. What is orthodromic and antidromic conduction?

Ans: Orthodromic conduction: Conduction of nerve impulse in normal direction that is from cyton to axon.

Antidromic conduction: Conduction of nerve impulse in opposite to its natural direction that is from axon to cyton.

3. What is the normal conduction velocity of Frog's sciatic nerve?

Ans: Normal conduction velocity of frog's sciatic nerve is 12-20 m/sec.

4. Enumerate the factors that govern the speed of conduction of an impulse in nerve fibers.

Ans: Factors affecting speed of nerve impulse conduction

- a. **Myelinated/Unmyelinated:** This allows to be generated at periodic intervals at node of Rannvier.
- b. **Diameter:** The increased diameter increases the speed of conduction.
- c. **Temperature:** As we increase the temperature , speed of nerve impulse conduction increases.

5. Which fiber conducts more rapidly, medullated or non-medullated? Give reasons.

Ans: Medullated fibers conducts more rapidly because Action potential is generated at periodic intervals at Node of Rannvier. The jumping of action potential allows for faster transmission.

6. Classify nerve fibers and give their speed of conduction against them.

Ans:

Nerve fiber type	Speed of conduction(m/sec)
A α	100
A β	50
A γ	25
B	15
C	10

7. What is effect of hypoxia on speed of conduction on different type of nerve fibers?

Ans: Effect of hypoxia on speed of nerve conduction on different nerve impulse

fastest B → A → C slowest

