

Experiment No. 5 – Seat Of Fatigue

1. What is the result of stimulating the muscle directly after no response is obtained through the nerve?

Ans:- When the nerve stops giving response due to fatigue, direct stimulation of the muscle still produces a contraction.

This shows that the muscle itself is not fatigued, the neuromuscular junction or nerve endings are the first to fatigue.

2. What is the effect of stimulation of the nerve after rest?

Ans:- After giving rest, stimulation of the nerve again produces contractions. Rest restores the chemical transmitter (acetylcholine) at the neuromuscular junction, so neuromuscular transmission returns to normal.

3. How do you say that the seat of fatigue is at the myoneural junction?

Ans:- Because during fatigue:

- **Stimulation of the nerve fails to produce a response, but**
- **Direct stimulation of the muscle still produces a contraction.**

This means the nerve and muscle are still excitable; only the neuromuscular junction has failed.

Therefore, the seat of fatigue is at the myoneural (neuromuscular) junction.

4. Where do you think the seat of fatigue is in intact animals?

Ans:- In intact animals, the major seat of fatigue is central, i.e., in the CNS. Decreased motor outflow from the brain and spinal cord leads to reduced muscle activity.

Peripheral fatigue also contributes, but central fatigue predominates.

5. How can you prove that the nerve is not the seat of fatigue?

Ans:- Even when the nerve stops producing muscle contraction (during fatigue),

- a. Direct stimulation of the muscle still gives contraction, and
 - b. After rest, nerve stimulation again gives normal responses.
- If the nerve were fatigued, it would not respond even after rest.
Hence, the nerve is not the seat of fatigue.