EXPERIMENT 12

THE ROLE OF MOTOR END-PLATE IN INTIALIZING TIREDNESS

GROUP NO: 1

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INTRODUCTION

There are 3 structures implicated in generating the contraction of the skeletal muscle:

1. Motor neuron
2. Motor end plate
3. The skeletal muscle fiber

Among these structures, only the motor neuron never gets tired. It is practically infatiguable. The other 2 structures develop tiredness but due to other reasons, of course. The neuromuscular synapse gets tired due to the depletion of the neurotransmitter. The muscle fatigues due to accumulation of metabolites in the structure and depletion of the energetic substratum.

OBJECTIVE

To demonstrate the fact that the neuromuscular junction gets tired before the muscle does.

Principle:

Application of a series of electrical stimuli on the motor neuron of a skeletal muscle, while recording the resulting myogram, until the muscle does not contract anymore. After this, electrical stimuli is then applied on the muscle.

METHODOLOGY

Part I

1. Push the “indirect stimuli” button so that the electrical stimuli will be applied on the motor neuron (and not on the muscle itself)
2. Click the right button to apply stimuli
3. Observe the myogram closely noting the decrease in the amplitude of the contractios
4. Click the clear screen.

Part II

5. Switch to the “direct stimuli” by pressing on the button so that the electrical stimulation will be directly on the muscle.
6. Click the right button to again, apply a complex a stimuli.
7. Again, observe the myogram until the muscle stops contracting.

DISCUSSION QUESTIONS

1. Describe your observations on the myogram in the 1st part of this exercise. What does the cessation of contraction mean? What could be the possible reason for this?

   on the first part of the activity (indirect stimulation), the duration of the muscl contraction is shorter. the cessation of muscle means that the muscle easily tires. one possible reason for it is the structure or composition of the medium used to stimulate the muscle.

2. Describe your observations on the myogram in the 2nd part of this exercise. What does the cessation of contraction mean? What are the possible mechanisms of this?

   on the second part of the exercise (direct stimulation), the duration of musc contraction is longer before the contraction stops. the muscle cessation means that the muscle is already tired. with the direct stimulation of the muscle, the muscle activity is longer than that when there is an indirect stimulation of the muscle.

3. What difference have you noticed between the myograms when stimulus complex is applied directly and indirectly? What can you conclude with this observation?

   when the stimulus is applied indirectly, there is a shorter peroid of contracti and the muscle tires easily. but if the stimulus is applied directly, there is a longer period of contraction and there is a longer endurance thus, the musc tires a bit longer than when the stimilus is applied indirectly thru a medium.

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