

## A METHOD OF ELECTROSTIMULATION OF THE VASCULAR RECEPTORS

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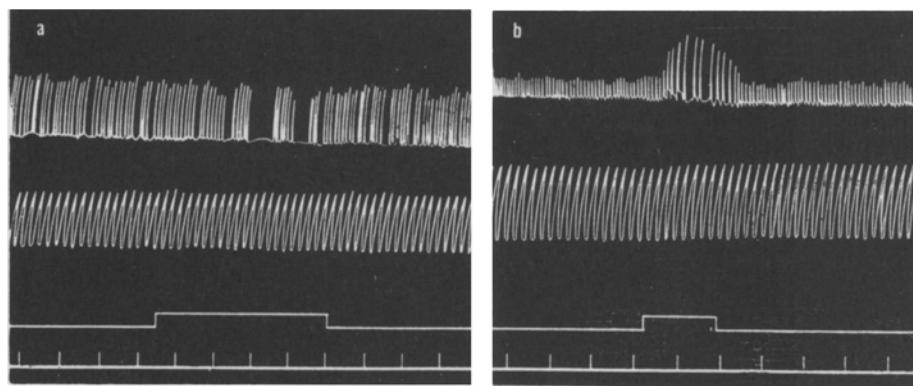
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Translated from *Byulleten' Éksperimental'noi Biologii i Meditsiny*, Vol. 51,  
No. 1, pp. 115-116, January, 1961

Original article submitted January 18, 1960

For studying the character of the reflex reactions caused by a nonspecific stimulant, G. N. Sorokhtin suggested the use of local stimulation of the receptors of the vascular system by electric current. Stimulating electrodes were introduced as probes into the femoral vein and sciatic artery of the frog; the electrodes were connected to an impulse starter which made it possible to supply square current regulated for voltage, frequency, and duration of impulses to the electrodes. The electrodes were made of thin copper wire (cross section  $120\mu$ ) covered with insulation, and consisting of two small wires glued together and having pinpoint defects in the insulating cover. During stimulation of the receptors of the femoral vein and sciatic artery by electric current, respiration and the mechanogram of the heart were recorded on a kymograph by the usual method.



Changes in respiration and activity of the heart in a frog during stimulation of the receptors of the femoral vein (a) and the sciatic artery (b). The meaning of the curves (from the top down): respiration, recording of heart contractions, marking of stimulation; time index (10 sec). Stimulator — square electrical current (voltage 1 v, frequency 70 hertz, duration 100  $\sigma$ ).

When the power and frequency of the current employed were equal to, or slightly exceeded the threshold, then respiration was inhibited during stimulation of venous receptors, while the frequency and character of heart contractions did not change. Under the same conditions, threshold and superthreshold stimulation of arterial receptors did not cause inhibition, but rather stimulated respiration markedly. The activity of the heart did not change in this case (see figure). Further intensification or increase in frequency of electrical stimulation for the most part led to a general motor reaction of the frog with disruption of respiratory function and activity of the heart.

Thus, electric current (nonspecific stimulant) can, under certain conditions, evoke from the receptors of the femoral vein and sciatic artery of the frog, reflex reactions resembling those arising as a result of the action of chemical substances [1].

#### SUMMARY

Electrodes prepared from two joined copper wires (cross section —  $120\mu$ ) are recommended for local stimulation of the vascular receptors.

Such electrodes are introduced directly into the vessels.

#### LITERATURE CITED

1. P. F. Konovalov, Byull. Éksp. Biol. Med. No. 2, 77 (1958).\*

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\* Original Russian pagination. See C. B. translation.