Proc. IUPS XXVIIIth intern. Cong. Physiol. Sci. Budapest, vol. XIV, 1980

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INFLUENCE OF SODIUM OCTANOATE ON THE ACTIVE STATE OF SKELETAL MUSCLES.

G. Maréchal, F. Kössler.

Dpt. Physiol. UCL, Brussels, Belgium and Fachbereich Arbeitsphysiologie Zentr. Inst. fur Arbeitsmedizin, Berlin, DDR.

In order to get more information about the mechanism of the depressive effects of fatty acids on heat and skeletal muscle contractility, the active state of frog sartorius muscles was investigated at 3-4°C. The tension redeveloped after shortening by defined amounts of length was measured during twitches and unfused tetani (4 or 5 stimulus per second) in Ringer's solution with and without 0.5 - 4 mM sodium octanoate. The results show that octanoate decreases the level of active state in relation to the lowered contraction amplitude and accelerates its decay. In a just fused tetanus irregularities appear during fatty acid exposure and in unfused tetanus the peaks and troughs become more and more distinct, even in concentrations of 1 mM octanoate (temperature (3 t 0.2°C). These effects are reversible when the muscle is brought back to normal Ringer, except for a further transient shortening of the contractions. There were no changes in the force-velocity relation. It is supposed that octanoate acts on an early step in the process of the electro-mechanical coupling or on the rate of the calcium pump of the sarcoplasmic reticulum.