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Ca^{2+} Sensitivity and Contractile Regulatory Proteins of Glycerinated Muscle Fiber*

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Ca^{2+}-sensitive fiber (CaS-fiber) of glycerinated rabbit psoas muscle lost Ca^{2+}-sensitivity by digestion of a part of TN-complex by trypsin or intrinsic protease (ex. CANP). Especially, TN-T was removed completely from the bands of SDS polyacrylamide gel electrophoresis by these factors. However, the addition of TN-T, isolated from TN-complex through the column using SP Sephadex C-50 according to the method of Wakabayashi and Ebashi (1968), did not bring about the recovery of Ca^{2+}-sensitivity, but TN-I and -C were fainted from the gel. Same result was also obtained from the experiment of CaS-fiber. Then, we checked if the added TN-T behaved itself as an extruding factor of TN-complex using fluorescence analysis. Then, it was found that they were extruded into the extra-fluid.

On the other hand, CaS-fiber lost Ca^{2+}-sensitivity transiently when the fiber was immersed in the conditions of high ionic strength and pH 4.5 at 25°C for 2—3 min. But, the treated fiber did not lose any TN-complex on the gel. In this case, Ca^{2+}-desensitization was caused by the functional modification of all contractile proteins. So, we examined the effect of NEM (N-ethylmaleimide), by the fluorescence analysis using DACM (a maleimide delivative), and it was suggested that CaS-fiber lost Ca^{2+}-sesitivity also by the block of SH-groups in another contractile proteins.

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