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A FIBROUS PROTEIN AND ITS SULFHYDRYL GROUPS IN DIVIDING SEA URCHIN EGGS

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The amounts of glutathione do not change in the course of cell division. On the other hand protein-bound SH groups fluctuate in amount.

During the fractionation of proteins, a fibrous fraction was obtained. The sea urchin eggs are homogenized in D.W. and centrifuged at 10000 g in the cold for 10 min utes. The sediment is washed with D.W. and extracted by cold 0.6M KCl for one hour. The suspension is centrifuged at 20000 g in the cold for 15 minutes. The supernatant is a fraction for fibrous protein.

When the extract is mixed with acetone, fibrous or menbrane-like precipitation appears. Thus the thread of the protein can be made by squirting the KCl solution into acetone through a pipette.

The thread contracts to about 20 per cent of its original length by the addition of cystine solution. No contraction takes place by cysteine. The contraction is reversible, for the original length of the thread is recovered when cysteine is added after removal of cystine. Furthermore the contraction is much reduced by Na-*p*-chloromercuribenzoate.

SH amount of the fibrous protein fluctuates during a division cycle. In comparison with the unfertilized state it slightly decreases at the monaster stage. From the beginning of the streak stage it increases and just before cytokinesis a maximum value is reached. After cytokinesis it decreases rapidly. If the change in length of the thread by cystine was due to the formation of intermolecular or intramolecular S-S bridges in the protein, the thread which is rich in free SH amount should contract more than a SH poor thread. The degree of the contraction correlates well with the amounts of SH in fibrous protein.

On the localization of the fibrous protein in dividing sea urchin eggs, further investigations are in progress.