detected in component M_{12} but none in components M_{11} , M_{13} and M_{14} .

It is concluded that the light-chain component of molecular weight 18500 present in skeletal myosin can exist in either a phosphorylated or a non-phosphorylated form. The evidence also suggests that enzymic mechanisms exist for the phosphorylation and dephosphorylation of this light chain.

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A Proteolytic Fragment of 26000 Molecular Weight from the Heavy-Chain Fraction of Myosin

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Subfragment 1 prepared by digestion of rabbit skeletal-muscle myosin by the method of Lowey *et al.* (1969) with high papain/myosin ratios (1:200, by wt.) migrated as two components on polyacrylamide-gel electrophoresis in 40% glycerol in 20mM-tris-glycine buffer, pH8.6. The two components were present in roughly similar amounts. Subfragment 1 prepared by using a papain/myosin ratio 1:2000 contained only a single component with the same electrophoretic mobility as the slower component obtained by digestion with the higher papain/myosin ratio. In each case the band patterns obtained were identical whether the gels were stained for protein or for adenosine triphosphatase activity (Wachstein & Meisel, 1957).

On electrophoresis in 8M-urea in 20mM-tris-glycine buffer, pH8.6, the light-chain pattern of three components (Perrie *et al.*, 1969) was similar in both preparations. The heavy-chain fraction of subfragment 1 was studied by electrophoresis in sodium dodecyl sulphate (Weber & Osborn, 1969). Under these conditions components with molecular weights 15500, 18500 and 23000, which corresponded to the three light-chain components noted on electrophoresis in 8M-urea, could be detected in both preparations. In addition, the digest with the low papain/myosin ratio contained components with molecular weights 87000, 69000 and 26000 derived from the heavy-chain fraction. The digest with the high papain/myosin ratio, however, contained little or none of the '87000 component' but contained a '53000 component' together with the '69000' and '26000 components'. Densitometric traces indicated

that the amount of '26000 component' was higher in preparations that possessed more of the '53000 component'.

The '26000 component' isolated by gel filtration on Sephadex G-200 in sodium dodecyl sulphate migrated as a single band on electrophoresis in sodium dodecyl sulphate. It has an amino acid composition similar to that of the heavy-chain fraction of myosin and contained 0.6mol of mono- N^{ϵ} -methyl-lysine, 0.9mol of tris- N^{ϵ} -methyl-lysine and 0.3mol of 3(*tele*)-methylhistidine/mol of fragment (cf. Hardy *et al.*, 1970).

Thus it appears that, depending on the papain concentration, two species of subfragment 1 molecules are produced that differ mainly in the proteolytic cleavages, present in the heavy chains. It is of interest that, despite these cleavages in the heavy chains, both preparations possess adenosine triphosphatase activity.

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Subunit Structure and Biological Activity of Tropomyosin B from Different Muscle Types

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Tropomyosin is required in addition to the troponin complex to restore Ca^{2+} -sensitivity to the Mg^{2+} -stimulated adenosine triphosphatase of desensitized actomyosin (Ebashi & Kodama, 1966). It also acts independently as an inhibitor of the Ca^{2+} -stimulated adenosine triphosphatase of desensitized actomyosin (Schaub *et al.*, 1967). Whereas the former property is not affected by the blocking of the thiol groups of tropomyosin with iodoacetate, phenylmercuric acetate or bis-2-carboxyethyl disulphide, the latter property was lost after treatment with these reagents. Under defined conditions of pH and ionic strength heating in the range 55–60°C was more effective in destroying the activity of tropomyosin in the relaxing protein system than its inhibitory activity on the Ca^{2+} -stimulated adenosine triphosphatase. Elsewhere we have reported that the former property is more sensitive to controlled mild proteolysis than is the latter (Schaub & Perry, 1969).

In polyacrylamide-gel isoelectric focusing and