From a diagnostic point of view, these differences in various pathological conditions seem of interest. The underlying causes will be the subject of further research.

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Inactivation of Staphylocoagulase by Trypsin and Pepsin[1]

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Staphylocoagulase is a substance, present in filtrates of cultures of pathogenic staphylococci, which has the property of coagulating plasma. Despite its name, which would imply enzymic character, little is known of either its chemical nature or its mode of action. Walston (*2*) found that the active principle was not dialyzable from crude filtrates and was present in the precipitates obtained with alcohol, dilute acetic acid, or half-saturated ammonium sulfate. He also stated that the activity is destroyed by tryptic digestion. The present report is concerned with further study of the effects of trypsin and pepsin on the activity of staphylocoagulase.

Cultures of a coagulase-positive *Staphylococcus aureus* grown for 7 days in tryptic digest medium were used as the source of coagulase. After incubation, 0.5 per cent of phenol was added as a sterilizing agent, the organisms removed by centrifugation, and the clear supernates used. Coagulase activity was titrated by a serial dilution procedure in which 0.5 ml. of each dilution was mixed with an equal amount of fresh, sterile, citrated human plasma. The titer of coagulase was considered to be the highest final dilution yielding a clot filling about half the volume of the mixture at the end of 2 hours.

TABLE 1

PROTEOLYTIC DIGESTION OF STAPHYLOCOAGULASE

Enzyme	pH of digestion	Coagulase titer		Percentage decrease in protein N
		Before digestion	After digestion	
Trypsin	8.7	128	0	77
"	8.7	128	0	74
"	8.7	128	0	81
"	8.7	64	0	80
Inactivated trypsin	8.7	64	64	0
None	8.7	128	64	0
Pepsin	2.0	64	0	70
"	2.0	128	0	64
"	2.0	128	0	72
Inactivated pepsin	2.0	64	64	0
None	2.0	128	128	0

Commercial trypsin (Pfanstiehl) and U. S. P. pepsin (Merck) were used. Five ml. of the supernate plus 20 mg. of the enzyme were incubated at the appropriate pH and 37°C. for a period of 2–2.5 hours, with occasional shaking. Controls were run for each enzyme using heat-inactivated enzyme and also with no enzyme present. Before carrying out the titration of coagulase, tryptic action was checked by heating for 5 minutes at 80°C.; peptic action, by adjusting the reaction to pH 8. The preparations were cleared by centrifugation, and the coagulase titer was then determined. The activity of the enzyme preparations was checked by measuring the protein nitrogen, *i.e.* that precipitated by 5 per cent trichloroacetic acid, before and after the incubation.

The results are shown in Table 1. There was complete destruction of coagulase activity in all experiments with active enzymes. There was a one-dilution decrease in coagulase activity in one of the controls, otherwise no decrease in the controls.

This work bears upon the question of the enzymic or non-enzymic nature of staphylocoagulase. Its extreme resistance to thermal inactivation (*1*) raises some doubt as to its being a typical enzyme. The complete destruction of coagulase activity by trypsin or pepsin indicates that it contains peptide linkages hydrolyzable by these enzymes. If coagulase activity depends upon intact protein structure, it is remarkably stable when heated, since we have been able to confirm Gengou's observations and extend them by the observation that 20 minutes at autoclave temperature (120°C.) does not abolish the coagulase activity of staphylococcal culture-supernates.

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Linkage Between the Genes for Sickle Cells and the M-N Blood Types[1]

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It has often been pointed out that the detection of instances of linkage in man is of importance not only in an academic sense but also in order to make more precise genetic prognoses for the occurrence of anomalies and diseases (*3, 4*) and to institute preventive measures on the basis of early recognition of preclinical signs (*2*). Various methods of analyzing family data for linkage have been formulated (*1, 3*).

We have recently been investigating the linkage relationships of the genes for sickle cells and for the various blood groups and types. To date, 33 families have been tested. Although we found no evidence against random assortment between the gene for sickle cells and the genes for the A-B blood groups and the Rh types, we did find evidence that the gene for sickle cells is linked with those for the M-N blood types.

In order that any family may furnish information on the linkage between two genes, it is necessary that at least one parent be heterozygous for both pairs of genes. The gene for

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