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Does the liver secrete a catalase accelerator?

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All observers are agreed that the catalytic activity of the liver is far in excess of that of muscle, and it is generally assumed, I think, that this is because the liver contains more catalase. Assuming the liver to be five times more active than muscle, a mixture of muscle and liver in the proportion of five to one ought to give the same catalytic activity as double the quantity of muscle alone. This is not the case, as the following experiment shows.

A 50 per cent. solution of commercial hydrogen peroxide, representing 1.5 per cent. H_2O_2, was used. The oxygen was collected over water in the usual way, and the volume reduced to 0° and 760 mm. Hg. The time was 10 minutes.

1 gm. rat's muscle gave 50 c.c. oxygen.
1 gm. rat's liver gave 244 c.c. oxygen.
0.5 gm. muscle + 0.1 gm. liver gave 250 c.c. oxygen.

To be on the safe side, the assumption has here been made that the liver is five times as active as the muscle, yet the mixture, instead of having the activity of the muscle, has the activity of the liver.

Assuming the liver to be ten times as active as muscle, the following combination was made: 0.5 gm. muscle + 0.1 gm. liver. This combination gave 224 c.c. of oxygen.

Blood clot + muscle gives similar results, and to a less extent, spleen also. The difficulty of getting spleen free from blood complicates the matter.

The above facts appear to be certain. The interpretation is not so clear, but it may be the liver secretes an accelerator of catalase, perhaps in the nature of an internal secretion; and it may be it is this accelerator that causes the catalase activity to vary in the different tissues and organs.