

This influence is slow to wear off after the application but seems generally to favor the later activity of the muscle — in other words, it is conserving in character. Magnesium appears to be the element to which we may look with most reason when seeking an agent that shall suspend katabolic changes without permanently damaging living structures. It is clearly less hurtful than potassium in like concentration. Comparison of magnesium with potassium shows that the former is not so distinctly the antagonist of calcium as is the latter. It also seems probable that the power to mediate vagus inhibition which Howell fixed upon potassium is a unique property of that element and not shared by magnesium.

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On the extracellular and intracellular venom activators, with special reference to lecithin, fatty acids and their compounds.

By **HIDEYO NOGUCHI.**

[From the Rockefeller Institute for Medical Research.]

Calcium chloride stops venom hemolysis caused in the presence of oleic acid or soluble oleate soaps, but not that induced by lecithin. In the majority of serums, including those of man, horse, guinea pig, rabbit, cat, rat, hen, pigeon and goose, there exist greater or less amounts of venom activators, and they can be completely inactivated by calcium chloride. Judging from the fact that lecithin in an available form is not affected by this salt it is not likely that these serums owe their venom activating property to lecithin. As these activators are also extractable with ether they probably are nothing else than certain fatty acids, and, probably, soluble soaps. Dog's serum is an exception to this, and contains, besides fatty acids and soaps, also activators of the nature of lecithin, for calcium chloride fails to stop completely its venom activating property. This lecithin-like activator is not extractable with ether, but is precipitable by half saturation with ammonium sulphate together with the serumglobulin. While the serum globulin falls out as a precipitate during dialysis this activator remains in the solution, from which a large percentage of lecithin is extractable with warm alcohol. In many respects this appears to be a protein compound of lecithin and possibly is identical with

Chabrie's albumon. This peculiar protein compound of lecithin seems to be absent from the majority of normal serums. Chabrie's albumon develops in any serum heated to coagulation, and renders all serums equally venom activating. Ovovitellin is another form of protein compound containing lecithin in available form for venom. On the other hand, pure serum globulins or serum albumins are not venom activating, notwithstanding their content of alcohol-extractable lecithin. Non-activating serum can be made activating by adding small quantities of oleic acid or oleate soaps.

The degrees of susceptibility of corpuscles are parallel to the amounts of fatty acids which they contain. The absence of fatty acids is associated with total insusceptibility of the corpuscles to the hemolytic agent of venom. The amounts of lecithin extractable from corpuscles are about the same in different bloods and bear absolutely no relation to susceptibility. The addition of adequate amounts of calcium chloride stops venom hemolysis with washed corpuscles of susceptible species. A previous addition of a small amount of lecithin annuls protection by this salt. A small amount of oleic acid or soluble oleate soap, which is insufficient to produce hemolysis alone, can render the corpuscles of insusceptible species hemolyzable by venom. An oily substance can be extracted with ether from the stoma of susceptible corpuscles, but not from the insusceptible varieties. This oily mass is venom-activating but contains no lecithin.

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On the influence of the reaction, and of desiccation, upon opsonins.

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The non-specific antiopsonic property of certain neutral salts and of lactic acid has been studied by Hektoen and his co-laborers, but the relation of the reaction to the opsonic activity of serum has so far escaped attention. The results of my experiments show that opsonins are most active in neutral reaction. For this the serums of the dog, ox, pig and rabbit were employed. Lacmoid was used as an indicator. The technic was essentially the same as Wright's.