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Antitoxic action of sodium iodid on morphin.

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A Preliminary Communication.

The relation of iodids to morphin was studied by Reid Hunt. He found that feeding mice, rats and guinea-pigs with potassium iodid increases their susceptibility to morphin poisoning. This may be considered as the chronic influence of iodids. In our experiments we studied their acute effects. Our experiments were made, in the first place, on rabbits and sodium iodid in 5 per cent. solution was the salt employed. Morphin was administered intravenously. The iodid solution was given intravenously, and subcutaneously, ten to thirty minutes before the morphin injection. The quantity of sodium iodid administered to each rabbit was quite large; 15 cubic centimeters intravenously and 30 cubic centimeters subcutaneously. Such injections of sodium iodid alone seemed to cause no ill-effects in rabbits.

Morphin, if not rapidly fatal, causes narcosis, paresis, tremors, convulsions and finally death. The fatal dose of morphin for rabbits is somewhat variable, it is therefore difficult to study the influence which other substances may exert upon the toxic action of morphin. The most definite results we obtained have been with doses of 300 and 250 milligrams of morphin per kilo body-weight. Eighteen rabbits received morphin alone; 11 of these animals received the drug (300 milligrams in each case) through the ear vein, while in 7 animals the morphin (300 or 250 milligrams) was injected through the jugular vein. Sixteen rabbits received sodium iodid besides morphin. In ten of these animals the injection (300 milligrams) was given through the ear vein and in six through the jugular vein. The difference in the results was quite striking. Of the eighteen animals which received morphin alone, ten died immediately after the injection, five lived less than 2 hours, one lived four days and two survived. Of the sixteen rabbits which received sodium iodid besides morphin, only one

died immediately after the injection, three lived longer than three hours, *i. e.*, between 3 and 20 hours (died in night), one lived eighteen, one twenty-three, and one thirty-six hours; one lived two days, one nine and one 16 days, and six rabbits survived. The meaning is quite unmistakable; the injection of sodium iodid undoubtedly reduced the mortality or postponed death in a palpable manner. We may add that the favorable effect of the iodid seemed to be more manifest in white than in gray rabbits.

The experiments seem to demonstrate also that sodium iodid antagonizes essentially the tetanic effects of morphin, while the depression is perhaps even more manifest in the iodid animals. However, we shall not discuss these particulars for the present.

We experimented also with mice. For mice we can only say for the present that iodid seems to retard perceptibly the onset of convulsions and the fatal outcome of morphin poisoning.

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On the nature of the semi-permeable membranes which surround the fibers of striated muscle.

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The view that the fibers of striated muscle are surrounded by semi-permeable membranes has received a wide acceptance among physiologists, and there has been a good deal of speculation regarding the nature of these membranes. The hypothesis that they are composed of lipoids has received much attention. Artificial lipoid membranes, however, have been found to be either impermeable both to water and to dissolved substances or else nearly equally permeable to water and to dissolved substances. It is a general rule that artificial membranes composed of pure colloids are either impermeable to both water and dissolved salts; or else nearly equally permeable to water and salts, and impermeable only to colloids. The best known artificial membranes which are semi-permeable with regard to salts dissolved in water are composed of precipitates of insoluble salts such as copper ferrocyanide and calcium phosphate.