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The influence of the salts of calcium and potassium on the degree of hypertrophy produced by adrenalin injections in rabbits.

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A series of experiments was conducted with a view to determine whether the antagonism between calcium and adrenalin, as recently described by Meltzer and Auer, Schrank and others, holds good also as regards the hypertrophy of the heart which adrenalin produces when injected intravenously into rabbits.

The method of investigation was as follows: One lot of rabbits was given every second day 0.2 c.c. of adrenalin chloride (1 in 1,000) in 2 c.c. of physiological salt solution. Throughout the whole series, twenty-four injections were given. A second lot received the same amount of adrenalin in 2 c.c. of a 10 per cent. solution of calcium chloride for the same length of time. Still a third lot was given 0.2 c.c. of adrenalin (1 in 1,000) in 2 c.c. of physiological salt solution every second day for twenty-four injections. The animals of this lot, however, were kept on a diet of carrots and potatoes only, the object being to give a diet containing a minimal amount of calcium. A fourth lot received the same amount of adrenalin in 2 c.c. of a 2 per cent. solution of potassium chloride.

As a result of these experiments, data were obtained which justified the following conclusions:

I. That calcium does not inhibit or prevent the hypertrophy of the heart produced by adrenalin.

II. That on a diet poor in calcium, the degree of hypertrophy is insignificant. From this it would seem that a certain percentage of calcium in the tissues is necessary in order that injections of adrenalin will produce hypertrophy.

III. The addition of potassium to adrenalin increases slightly the degree of hypertrophy.