Cardiotonic Action of Hamycin

SIR,—A new antifungal antibiotic, hamycin, was recently prepared by Hindustan Antibiotics Ltd. A pharmacological investigation of its properties shows it to be a potent cardiotonic agent.

In 12 experiments on perfused frog hearts, failure was induced by raising venous pressure in steps of 1 cm. (Burn, 1952). Cardiac output was simultaneously recorded through a cannula in the aorta. The drug was then perfused in a concentration of 2×10^{-7} g./ml. of amphibian Ringer-Locke solution. A marked increase in cardiac output as well as a marked increase in the amplitude of contraction was noted. This was followed by a gradual increase in diastolic tone and a decrease in cardiac output terminating in systolic arrest of the ventricles. A concentration of 10 ml. of tincture of digitalis per litre of amphibian Ringer-Locke solution produced similar effects, both qualitatively as well as in time course.

In another 6 experiments on perfused frog hearts failure was induced with pentobarbitone sodium, 0·1 mg./ml. of amphibian Ringer-Locke solution. After 10 min. of perfusion with pentobarbitone sodium, a concentration of 2×10^{-7} g./ml. of hamycin along with 0·1 mg./ml. of pentobarbitone sodium was perfused. This produced a marked increase in the amplitude of contraction, terminating finally in systolic arrest. The effect was comparable qualitatively and in time course with a concentration of 10 ml. of tincture of digitalis per litre of amphibian Ringer-Locke solution.

In perfused rabbit hearts (Burn, 1952) (Langendorff's preparation), a concentration of hamycin 2×10^{-7} g./ml. of mammalian Ringer-Locke solution increased the amplitude of contraction in 7 out of 8 experiments. In another 7 experiments on perfused rabbit heart, failure was induced by perfusing pentobarbitone sodium, 0·1 mg./ml. of Ringer-Locke solution. After 10 min. of perfusion with pentobarbitone sodium, Ringer-Locke solution containing hamycin, 2×10^{-7} g./ml. and pentobarbitone sodium 0·1 mg./ml. was perfused. In 4 of these experiments an increase in the amplitude of contraction occurred; in 2 experiments the ventricles rapidly passed into systolic arrest while in one experiment there was a decrease in the amplitude of contraction. In 4 control experiments with tincture of digitalis, 10 ml./litre of Ringer-Locke solution, a similar increase in amplitude of contraction was noted in 2 while in the other 2 experiments only systolic arrest was noted. Control experiments with propylene glycol, which was used as a solvent for hamycin failed to exhibit any of the actions of hamycin.

This compound thus appears to be more potent than digitalis and offers new avenues in the search for cardiotonic drugs. Further studies are in progress.

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REFERENCE

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