

LETTERS TO THE EDITOR

preventing the development of fibrous tissues. Thus both histamine and 5-HT may be involved in both exudative and reparative stages of the inflammatory response. Recently it has been suggested that histamine liberated from mast cells may prepare many more connective tissue cells than are normally available to receive heparin or heparin containing granules, which may be used in preparing ground substances (Riley, 1962), and that 5-HT may possibly, particularly in the rat and mouse, act similarly (West, 1962). The anti-inflammatory effect of histamine and more particularly 5-HT depletion, lend support to this view.

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Demonstration of Interaction between Pairs of Antibacterial Agents

SIR,—It has been recognised that the antibacterial action of pairs of antibiotics may be that of simple addition of their separate effects, or one may enhance the activity of the other, or there may be mutual antagonism. These phenomena have been demonstrated by a number of techniques, one of which uses paper strips loaded with the compounds and laid at right angles on a seeded agar plate. Zones of inhibition are produced after incubation and the pattern of the growth between the strips gives information about the mutual effect, if any, of the pairs of compounds (Dye, 1955-56; Maccaro, 1961).

In a problem concerning the formulation of eye drops it was required to find if pairs of compounds used as bacteriostatic agents were more or less effective than each one alone or if no interaction between them occurred, and the method applied to antibiotics quoted above was investigated. In effect, the interaction of 28 combinations of antibacterial substances from the following list, phenylmercuric nitrate, 2-phenylethanol, chlorocresol, thiomersalate, chlorhexidine, benzalkonium chloride, chlorbutol and Eye-drop Solution B.P.C. were tested against *Pseudomonas aeruginosa*, NCTC 7244, *Streptococcus pyogenes*, NCTC 8708, *Staphylococcus aureus*, NCTC 4163, *Escherichia coli*, NCTC 86, *Bacillus subtilis*, NCTC 8236 and *Proteus vulgaris*, NCTC 4636.

With all six bacterial species, no antagonism was demonstrated between any pair of bacteriostats listed; there was evidence of mutual enhancement of activity between 2-phenylethanol and the organic mercurials. Antagonism between calcium thioglycollate and phenylmercuric nitrate and between chlorhexidine and lecithin can be strikingly demonstrated by this method.

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