Both compounds at 100 mg/kg depressed gain in weight but, at 50 mg/kg, gain in weight was comparable with that of control mice. Livers and spleens appeared normal at death.

As is shown in Table 1, labelled (I) was not detectable in either liver or spleen DNA. Labelled (II), in contrast, was incorporated into the DNA of both liver and spleen.

Thus, it appears that 5-bromo-3-*sec*-butyl-6-methyluracil is not recognizable as a thymine analogue by the mouse within the limits of the test systems utilized in this experiment.

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An Antibiotic-like Effect of *Lactobacillus acidophilus*

Until a few years ago, the beneficial effects resulting from the ingestion of the *Lactobacillus acidophilus* in cases of gastro-intestinal disturbances were attributed to the simple overgrowth of the offending pathogen by the *Lactobacilli*. Recently a number of workers have indicated that there was more to the reaction than just competition between strains. The substance produced by *L. acidophilus* has been called variously antagonist[1], lactobacillin[2], lactocidin[3], and antibiotic[4]. All these workers found that the substance was extremely labile, and attempts to isolate it met with failure. A successful method for the visual demonstration of the phenomenon is described here but isolation has not yet been successfully accomplished.

The technique used was similar to the cup-plate assay for antibiotics. Skim milk–digest–tomato juice agar heavily inoculated with a *Staphylococcus* isolated from fæces (Fig. 1) or nutrient agar inoculated with *E. coli* (Fig. 2) was poured in a Petri dish, and allowed to harden. Cups were cut with a sterile, stainless steel ring and the depression so formed filled with agar seeded with *L. acidophilus* and incubated at 37° for 24 h. The plates were then photographed and zones of inhibition stand out clearly. The suppression of growth by production of acid was ruled out because there was no difference in the *p*H of the agar in the cup, in the inhibition zone or in the outer zone. A logical explanation of the therapeutic value of *L. acidophilus* can be predicted on the excretion of an antibiotic-like substance which, although weak and labile, is being continuously produced by the rapidly growing lactobacilli and therefore may, in part, account for the *in vivo* as well as the *in vitro* effect.

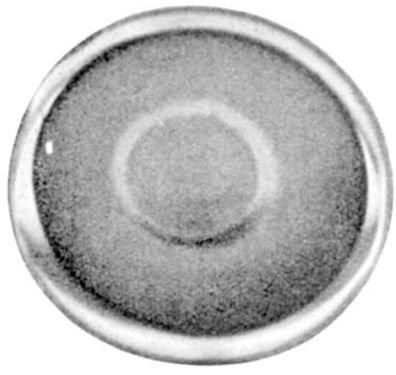

Fig. 1. The plate was seeded with a culture of *Staphylococci* isolated from human fæces and the inner cup seeded with *L. acidophilus*. After 24 h incubation at 37° C, the zone of inhibition is clearly visible

Fig. 2. The plate was seeded with *E. coli* and the cup on the left seeded with *L. acidophilus*. A pronounced zone of inhibition was produced after 24 h at 37° C. The 'ghost' cup on the right contained un-inoculated agar as a control, and has been overgrown by the *E. coli*

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Reaction of Hydrogen Chloride Gas on RNA and its Component Nucleotides

The release of purines and characteristic sequences of pyrimidine oligonucleotides from DNA has been achieved by the use of diphenylamine and formic acid[1]. In RNA the phosphodiester bonds are extremely acid and alkali-sensitive due to the ease with which cyclic phosphate intermediates are formed involving the 2′ hydroxyl group. In order to limit the possibility of cyclization an attempt was made to carry out a depurination reaction with RNA in the solid phase.

Preliminary investigations have revealed that the degradation of RNA by boron trichloride (in which the RNA is insoluble) shows a measure of specificity and yields purines together with some pyrimidine oligonucleotides[2]. The mechanism of this reaction is thought to involve the production of hydrogen chloride by hydrolysis of the boron trichloride with the water present in intimate association with the RNA.

To test this hypothesis, hydrogen chloride gas has been reacted with RNA in the solid phase and found to be much more efficient than boron trichloride in releasing purines and pyrimidine oligonucleotides. Although water was again found to be necessary for complete reaction, there was no loss of ultra-violet absorbing material as found with boron trichloride.

The experiments were carried out on yeast microsomal RNA[3] which had been freeze-dried at a concentration of 5–10 mg/ml. The water content varied from 12–15 per cent, but could be reduced to 2 per cent by standing over phosphorus pentoxide *in vacuo* for several days. The reactions occurred in tubes into which hydrogen chloride gas was introduced at room temperature and pressure. The tubes were then sealed off and heated in a water bath for a range of times and temperatures. The reaction