BACTERIOLOGY

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ABSTRACTS

A tentative plate assay method of vitamin B_{12}. R. E. BENNETT and I. ROY COHEN. Research Department, Commercial Solvents Corporation.—A cup plate assay for vitamin B_{12} has been designed using *Lactobacillus leichmanii* ATCC 4797 and a medium modified from that suggested by Skeggs et al. The assay range is from 0.05 to 2 micrograms per ml, based on growth zones from 12 to 22 mm diameter.

The acetate-acetyl phosphate system of *Leuconostoc*. R. D. DEMOSS and I. C. GUNSALUS, Indiana University.—In a study of the intermediary metabolism of *Leuconostoc mesenteroides*, it became pertinent to determine if an acetyl phosphate forming system existed in this organism, and if so to determine its properties as a possible intermediate step in the formation of ethyl alcohol.

Vacuum dried cells, and a cell-free enzyme obtained from them by sonic oscillation, have been shown to contain an active acetyl phosphate forming enzyme with adenosine-triphosphate (ATP) and acetate as substrates. This enzyme has been shown to possess a metal activator.

The reaction has been followed by measuring both the formation of an anhydride by the hydroxamic acid reaction of Lipmann and by the accumulation of a labile phosphate compound of the acyl type.

The cell-free enzyme preparations when dialyzed lost most of their activity and could be reactivated by divalent ions, of which manganese was the most effective. Magnesium and cobalt were also active. The enzyme from *Leuconostoc mesenteroides* is specific for acetate, that is, does not catalyze acyl phosphate formation with propionate or butyrate.

Multiplication of *Brucella* in the yolk sac of embryonated chicken eggs. KATHLEEN GAY and S. R. DAMON, Indiana State Board of Health.—As one phase of the Indiana Brucellosis Study Project, the embryonating egg was tested as an enrichment medium for the isolation of *Brucella* from blood specimens. The rate of multiplication of *Brucella melitensis*, when injected in small numbers into the yolk sacs of white leghorn eggs of varying ages of embryonic development, was first determined. The growth curves indicated a definite bacterial inhibition by 1- to 2-day old embryos and optimum growth in 5-day old embryos.

As few as 1 to 10 organisms multiplied rapidly when introduced into the yolk sacs of 5-day old embryos. Comparable growth curves were obtained for *B. suis* and *B. abortus.*

A new crystalline antibiotic from an unidentified streptomycete. R. L. HARNED, P. H. HIDY, C. J. CORUM, and K. L. JONES. Commercial Solvents Corporation, Terre Haute.—A new crystalline antibiotic has been isolated from a streptomycete obtained from Nigerian soil. Data on the biological synthesis, isolation, *in vitro* activity, chemical properties, and toxicity in mice are presented.

An in vitro study of the combined effect of drugs and antibiotics on bacteria responsible for urinary infections in man. MARION J. MCBURNEY, DePauw University.—This study has shown that combinations of various drugs are more effective on some organisms than either agent alone. The combined effect was greater when a sulfa drug and an antibiotic were used than when two sulfa drugs or two antibiotics were used.

Combinations of streptomycin and sulfathiazole and of streptomycin and sulfadiazine were bactericidally effective against *Micrococcus pyogenes* var. *aureus*, *Escherichia coli*, and *Proteus mirabilis.* Complete inhibition of *Micrococcus pyogenes* var. *aureus* was also obtained with penicillin and streptomycin, penicillin and sulfathiazole, and penicillin and sulfadiazine.

Streptococcus sp. was susceptible to the combined action of sulfathiazole, or sulfadiazine, and mandelic acid.

Aerobacter aerogenes and *Pseudomonas aeruginosa* were not affected by the drugs employed either singly or in combination.

The microbiological determination of lysozyme. A. N. SMOLELIS and S. E. HARTSELL. Purdue University.—A rapid, accurate method is described for the assay of lysozyme, based on the increase in light transmission of a suspension of *Micrococcus lysodeikticus.*

The turbidimetric assay, after standardization with a crystalline lysozyme preparation, can be applied to lysozyme in natural material.

The *Micrococcus lysodeikticus* cells used for assay were grown in large quantities, treated with ultraviolet light, lyophilized, and stored in the ice box. These cell preparations were stable and of constant sensitivity.

The assay method was applied successfully to a bentonite-pyridine extract of natural materials. Hens' egg albumin extract contained 0.86 mg lysozyme per ml, dried albumin 19.7 mg per gm, and rat kidney extract 0.024 mg per ml. The lysozyme content of kidney extract could be determined with an error of less than 7%. The assay procedure is adaptable to small or large quantities of lysozyme, is reproducible, and accurate.

Effect of some haloacylamides on multiplication of the vaccinia virus. R. L. THOMPSON and MARIAN L. WILKIN, Indiana University, Indianapolis.—During the course of an investigation to determine the

effect of analogs of pyrimidines and purines on the growth of the vaccinia virus in chick embryonic tissues, it was observed that several pyrimidine derivatives containing halogenated acylamide groups in the 5-position prevented viral multiplication. The presence of the pyrimidine ring is not essential for virostatic activity, since the chloracetamido group can be coupled to the benzene ring with the formation of an active substance. Compounds of the latter class structurally resemble chloromycetin. The mode of action of the halogenated acylamide grouping has not been determined.