83 (2043)

The presence and determination of adenine nucleotide in human blood.

By HENRY JACKSON, JR.

[*From the Department of Medicine of the College of Physicians and Surgeons, Columbia University, and the Presbyterian Hospital, New York.*]

Tungstic acid protein free blood filtrate was hydrolyzed with dilute mineral acid for two hours, then made strongly alkaline with ammonia and evaporated slowly to a small volume. After filtration, the filtrate was made alkaline with ammonia and precipitated with silver chloride in ammonia. The washed precipitate was decomposed and picric acid added. The resulting crystaline precipitate was purified and one analysis proved to have 29.3 per cent. nitrogen. It melted at 281 C. After removal of the picric acid, the residue proved to have approximately 38 per cent. nitrogen. It precipitated with gold chloride and ammoniacal silver. It gave no color with Nessler's solution and no blue color with alkaline phosphotungstate.

Tungstic acid filtrate was precipitated with silver, the precipitate broken up and the filtrate precipitated with neutral lead acetate in acid solution. The lead precipitate was decomposed and then gave a strong pentrose reaction with orcin and an absorption band between the D and the E. With napthoresorcin the color produced did not shake out with ether or benzol. There was no xanthin test nor was there any trace of blue with phosphotungstate.

If the blood filtrate was first hydrolyzed with acid and then the same procedures carried out no traces of pentrose reaction could be found.

If the blood filtrate was precipitated with silver, then lead, and the filtrat from lead sulphide was hydrolyzed with acid subsequent addition of silver precipitated the nitrogen containing portion of the substance, while the substance producing the pentrose reaction remained in the filtrate.

If the inorganic phosphates are removed from the filtrate from lead sulphide there is no immediate test for phosphates

with ammonium molybdate. If, however, this same filtrate, free from inorganic phosphates be hydrolyzed with dilute acid before the test is done a yellow precipitate characteristic of phosphates appears immediately.

To tungstic acid blood filtrate was added under definite conditions uranium acetate. The washed precipitate was decomposed and the resulting filtrate on digestion gave a nitrogen content of about 4 mgm. of nitrogen per 100 c.c. whole blood. Blanks were negative. Adenine nucleotide added to blood was recovered quantitatively by this method.

Conclusions. Adenine, probably bound is present in considerable quantities in normal human blood. There is some evidence presented to show that it is bound in the form of adenine nucleotide.

A method is outlined whereby nucleotides may be determined quantitatively in small samples of tungstic acid blood filtrate.

It is suggested that a large part of the undetermined nitrogen in the tungstic acid filtrate of Folin and Wu is adenine nucleotide.

The work is being continued at The Thorndike Memorial Laboratory of the Boston City Hospital.

ABSTRACTS OF COMMUNICATIONS, MINNESOTA BRANCH

Eighth meeting.

Minneapolis, Minnesota, December 13, 1922

84 (2044)

A statistical study of the form and growth of a diphtheroid bacillus.

By ARTHUR T. HENRICI.

[*From the Department of Bacteriology and Immunology, University of Minnesota, Minneapolis, Minn.*]

In a previous communication[1] I described changes in the size of the cells of *Bacillus megatherium* during the growth of a

[1] PROC. SOC. EXP. BIOL. AND MED., 1921, xix, 132.