

ON THE CARBOHYDRATE GROUP IN THE NUCLEO- PROTEID OF THE SPLEEN.

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By the term nucleoproteids is designated that class of substances which on cleavage yield, besides the usual components of the proteid molecule, phosphoric acid, purin bases, pyrimidin derivatives, and carbohydrates. While in recent years much progress has been made in our knowledge of the basic constituents of nucleoproteid, our knowledge of the carbohydrate moiety of the molecule has remained very imperfect. The present note deals with the results of our further investigation of the proteid derived from the spleen; but it is our intention to study, in a similar manner to that mentioned here, the proteids from other organs. We have succeeded in obtaining from the spleen a substance presenting the properties of glucothionic acid—that is, a nitrogenous body composed of sulphuric acid and carbohydrate.

Hitherto substances of this class had been obtained by Moerner and by Schmiedeberg from cartilage, by Krawkaw and Odi from amyloid, by one of us (Levene) and Gies and his co-workers from mucoids and mucin. Levene had also shown it to exist in the parenchymatous organs, a fact later extended by the present writers.

In the present study the nucleoproteid of the spleen was prepared in the usual manner by boiling the organs with water and acidulating the extract with acetic acid. The precipitate was washed by decantation and extracted with alcohol or with alcohol and ether. The air-dry product contained two per cent. of phosphorus. This proteid was subjected to the treatment already described by Levene¹ for obtaining glucothionic acid.

¹ *Zeitsch. f. physiol. Chem.*, 1903, xxxvii, 400.

By this means a substance has been obtained which, while not absolutely free from nucleic acid, yet contains (one sample tested) 8.45 per cent. of nitrogen and 3.19 per cent. of sulphur. This body reduces Fehling's solution only after previous hydrolysis with mineral acids, and gives a pronounced reaction for pentose with orcin-hydrochloric acid. On cleavage of the proteid itself with dilute mineral acids a substance presenting the same properties was obtained. The proportion of sulphuric acid was, however, much lower.

Two interpretations of this finding occur to us. First, substances commonly designated nucleoproteid are composed of two distinct substances—mucoid and true nucleoproteid. Second, they contain in their molecule a glucothionic acid. We are at present engaged upon a further study of this problem.