Preliminary Notes

A lipid factor from liver which enables *P. notatum* extracts to break down intact lecithin

FAIRBAIRN[1] reported that a dialysed extract of *Penicillium notatum* possessed an active phospholipase B which attacked lysolecithin but was completely inactive towards intact lecithin. In the present experiments it was found that when similar phospholipase B preparations were incubated with crude liver-lipid emulsions at pH 4, the lecithin contained in them was rapidly and completely degraded although purified ovo-lecithin or liver lecithin were not attacked by the enzyme. Analysis of the reaction mixture for glycerylphosphorylcholine, acid-soluble P, fatty acids and disappearance of fatty-acid acyl ester bonds indicated that the lecithin had been broken down into glycerylphosphorylcholine and fatty acids. Paper chromatography confirmed the formation of glycerylphosphorylcholine, and also showed that phosphatidylethanolamine had been attacked with the liberation of glycerylphosphorylethanolamine.

By chromatography on alumina columns and solvent fractionation, etc., a purified fraction has been isolated from sheep and rat liver, which is especially active in causing extracts of *P. notatum* to attack purified lecithin. No lecithin attack was detected either in the absence of the fraction or the enzyme preparation. The fraction is free of lecithin, but contains some phosphatidylethanolamine and a little phosphatidyl inositol. In solubility it behaves completely as a lipid, being soluble in diethyl ether, chloroform and absolute methanol, and is not removed from $CHCl_3$ by aqueous washing according to the procedure of FOLCH *et al.*[2]. The active fraction is thermostable at 100° (pH 4), and also when left standing in methanolic solution at room temperature, and it is insoluble in acetone. It is rapidly destroyed by boiling with 0.1 *N* acids or alkalis or by precipitation of the tissue with trichloroacetic acid.

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On a chemical degradation of deoxyribosenucleic acid

Although degraded to mononucleotides by a combination of enzymes[1] DNA has been well known for its resistance to chemical hydrolysis. We wish to report here a method by which DNA has been degraded with alkali under mild conditions.

The method employed was suggested by the hydrolytic behavior of ribosenucleic acid, RNA, which in contrast to DNA is readily hydrolyzed to mononucleotides by alkali. This surprising difference in hydrolytic behavior has been very elegantly explained by BROWN AND TODD[2] on the basis that RNA can exist as a cyclic 2′, 3′-ribose phosphate, a tertiary ester sensitive to hydrolysis, whereas DNA, lacking the 2′-hydroxyl, can exist only as a secondary phosphate ester relatively stable to alkali. Esterification of DNA to the sensitive tertiary phosphate state should presumably, therefore, give a product hydrolyzable by alkali.

The procedure followed was based upon a previous report[3] that naphthyl acid phosphates are quantitatively esterified by diazomethane. The sodium "half-salt" of β-naphthyl dihydrogen phosphate, for example, gave with diazomethane an equimolar mixture of β-naphthyl dimethyl phosphate and sodium β-naphthyl methyl phosphate in essentially quantitative yield. Subsequently, phosphatoethyl cotton[4]*, an ion-exchange fabric, was similarly quantitatively methylated by this procedure[5]. More recently BROWN AND TODD[6] prepared alkyl esters of the four ribose nucleotides as well-characterized products by the use of diazoalkanes, and the dimethyl ester of uridine-3-phosphate with diazomethane[7].

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