Apparent Phosphate Ion Effect on Activity of Phosphoprotein Phosphatase

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Phosphoprotein phosphatase activity was lost upon dialysis of the extract (rat liver and erythrocytes). The studies (to be reported in detail elsewhere) show an activating effect of a small amount of phosphate ion (to a final concentration of 0.1 to 0.3 mM PO_4 depending on substrate concentration) whereas higher concentrations are inhibitory, as found earlier [1].

1. Norberg, B. *Acta Chem. Scand.* 4 (1950) 1206.

Effects of Carcinogenic Amines on the Protein and Ribonucleic Acid Metabolism of the Liver

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The incorporation in vitro of [^{14}C]-DL- valine into the proteins of rat liver slices was studied after different periods of preincubation with 2-aminofluorene (AF), 2-acetylaminofluorene (AAF), 7-fluoro-2-aminofluorene (FAF), 7-fluoro-2-acetylamino-fluorene (FAAF), 2-aminonaphtalene (AN) and aniline at varied concentrations. While a marked reduction of the incorporation was caused by the polynuclear amines, no significant inhibition was observed in the case of aniline even at relatively high concentrations (10^{-3} M). Similar experiments were performed with AF and AN, with [^{14}C] adenine as isotopic component. Adenine and guanine were isolated from RNA, and their specific activities were determined. Also in this case a marked inhibition was observed, less strong however than in the [^{14}C] valine experiments. Within the group of polynuclear amines the capacity of inhibition was not in detail correlated to the carcinogenic potency. As a rule AN was at least as inhibitory as AF, although AN is known to exert its carcinogenic effect on other target organs than the liver. FAF had a slightly lower inhibitory effect than AF. An inhibition by AF and FAF was observed not only in rat liver slices but also in liver slices of guinea pig, although this animal is refractory to the carcinogenic action of AF derivatives. Rats were treated *in vivo* with AN (100 mg/kg in 1.0 ml of propylene glycol, *per os*). The incorporation of [^{14}C] L-leucine into proteins by a mitochondriafree liver preparation was studied 4 h after the AN- treatment. The activity of the preparation for leucine incorporation *in vitro* was reduced when compared with similar preparations from untreated rats. The microsomes of the system showed a decreased activity in comparison with normal microsomes.

Inhibitor Effects on Light-Induced Phosphorylation. A Comparison between Plant and Bacterial Systems

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Electron transport in mitochondrial oxidative phosphorylation is strongly inhibited by amytal (I), atebrin (II),antimycin A (III) and 2-*n*-heptyl-4-hydroxyquinoline-N-oxide (IV). The effects of these inhibitors were tested on light-induced phosphorylation (LIP) in washed spinach chloroplasts, and compared with earlier results obtained with washed bacterial (*Rhodospirillum rubrum*) chromatophores [1-4]. The following results were obtained in an ascorbate containing medium, whether or not flavin mononucleotide had been added (aerobic conditions, saturating light intensity, 20°C). A 2×10^{-3} M concentration of I gave only little inhibition, as in bacterial LIP [4]. 5×10^{-5} M concentrations of II, III or IV gave inhibitions between 50 and 100 %. The inhibition with II occurs in the same inhibitor concentration region as with chromatophores and indicates participation of chloroplast flavin in the electron transport in chloroplast LIP. For III and IV, however, the concentrations needed are about 1 000-fold higher than with chromatophores (or animal mitochondria).

Earlier results with these inhibitors have indicated that electron transport in bacterial (*R. rubrum*) LIP proceeds over a chain with at least two electron carriers [3,4]. The present results will be discussed in relation to current schemes of electron transport in plant LIP, and the electron transport chains in plant and bacterial LIP will be compared.