when the amounts of coenzyme A and choline acetylase (therefore CoA acetylating system) are increased, suggests that these compounds do not affect the enzymatic transfer of acetic group from acetyl-coenzyme A to choline, but they inhibit the acetylation of coenzyme A. This, moreover, was likely, because our substances inhibit sulfanilamide acetylation also in pigeon liver extracts [2, 10].

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Institute of Pharmacology, University of Milan (Italy), November 14, 1957.

Riassunto

Numerosi derivati di acidi acil-aromatici si dimostrano attivi nell'inibire la acetilazione della colina catalizzata dal Coenzima A.

Si ritiene che questa inibizione si realizzi attraverso una inibizione della acetilazione del Coenzima A.

[10] S. GARATTINI, C. MORPURGO, and N. PASSERINI (in press).

Serological Properties of Poly-L-Tyrosine Derivatives[1]

SELA *et al.*[2] have reported that guinea pigs are sensitized by the injection of polytyrosyl-gelatin, but not by gelatin alone, nor by a copolymer of tyrosine and aspartic acid. Since gelatin has been found to be antigenic in some species[3], it is not clear whether the antigenicity of polytyrosyl-gelatin is due to its gelatin moiety or to its polytyrosyl residue. We have investigated, therefore, the serological behaviour of two polytyrosine derivatives. One of them, poly-L-tyrosine-azophenylarsonate (PTA) was prepared by coupling polytyrosine ($n = 45$)[4] with an excess of diazotized arsanilic acid. The other, poly-L-tyrosyl-gelatin-azophenylarsonate (PTGA) was obtained in the same manner from poly-L-tyrosyl-gelatin[2]. Rabbits were injected subcutaneously with four 30 mg doses of PTA or PTGA directly or after addition of alum and neutralization with alkali. The first three injections were given in intervals of 3 days, the last injection after a further week. One week later the animals were bled and their sera tested with PTA, PTGA and also with arsanil-azo-bovine-γ-globulin (AsBGG) prepared from one gram of bovine γ-globulin (Armour) with 0·1 g of diazotized arsanilic acid. Neither PTA nor PTGA gave any precipitates. However, the serum from a rabbit injected with alum-PTGA gave a distinct precipitin test with AsBGG. When 4·5 ml of the serum were incubated with 0·5 mg AsBGG, a precipitate was obtained which was not noticeably soluble on addition of 0·5 ml of a 2% solution of AsBGG. The insoluble residue, after washing, weighed 2·2 mg; colorimetric comparison of its solution in 1% NaOH with a standard solution of AsBGG showed that it contained 0·2–0·3 mg AsBGG. When three 2 ml samples of the same immune serum were incubated with 0·2 mg PTA, PTGA or AsBGG, only the last substance gave a precipitate; it contained approximately 0·1 mg AsBGG.

We conclude from these results that poly-L-tyrosine-azophenylarsonate is not an antigen, but that poly-L-tyrosyl-gelatin-azophenylarsonate, if injected with alum as adjuvant, induces formation of precipitins which combine with the tyrosine-bound azophenylarsonate groups. Evidently, the nonantigenic poly-tyrosyl-azophenylarsonate acquires antigenic properties by its combination with gelatin.

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Department of Chemistry, Indiana University, Bloomington, Indiana, November 2, 1957.

Zusammenfassung

Polytyrosin und Polytyrosylgelatine wurden mit diazotierter Arsanilsäure gekoppelt und in Lösung oder nach Fällung mit Alaun und Alkali Kaninchen injiziert. Die injizierten Substanzen wurden von keinem der Sera präzipitiert. Hingegen präzipitierte das Serum der mit gefällter Arsanilazo-polytyrosyl-gelatine injizierten Tiere Arsanilazo-Rinderserumglobulin. Wir schliessen daraus, dass Arsanilazopolytyrosin nicht als Antigen wirkt, dass es aber durch Bindung an Gelatine antigene Eigenschaften gewinnt.

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Sucrose and Starch Synthesis in Sugar Cane Plant

During the investigations on the formation of sucrose in the sugar cane plant it was observed that all parts of the plant except the top node of the matured sugar cane contained only sucrose, glucose and fructose but not starch, at all stages of the development, whereas the top node of the matured sugar cane contained starch. This led us to think that a sucrose-synthesizing enzyme system may be predominant in all parts except the top node of the mature sugar-cane in which the presence of starch-synthesizing enzyme may be a special feature. Hence studies were undertaken to detect the sucrose- and the starch-synthesizing enzyme systems in various tissues of the plant at different stages of development and the results are recorded in this communication.

Young, middle-aged and matured sugar-cane plants were taken for the experiment. Cell-free extracts of leaves, roots, nodes and internodes were prepared as previously described[1] and tested for the presence of sucrose-synthesizing and starch-synthesizing enzyme systems.

For estimation of sucrose-synthesising enzyme system, 2 ml of the assay system contained citrate buffer (pH 6·5), 50 μM; fructose, 60 μM; glucose-1-phosphate,

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[2] M. SELA, E. KATCHALSKI, and A. L. OLITZKI, Science *123*, 1129 (1956).

[3] P. MAURER, Arch. Biochem. Biophys. *58*, 205 (1955).

[4] E. KATCHALSKI and M. SELA, J. Amer. chem. Soc. *75*, 5284 (1953).

[1] K. P. PANDYA and C. V. RAMAKRISHNAN, Naturwissenschaften *15*, 352 (1956).