nicotinamide derivatives, the N^1-alkylnicotinamide chlorides were demonstrated to be bound at a "pyridinium ring" region of the NAD binding site of the yeast enzyme. A linear chain length effect was observed in the binding of these inhibitors indicating that nonpolar interactions play a significant role in the functioning of these compounds. From these and related studies with other nitrogen bases, it was suggested that the "pyridinium ring" region of the NAD binding site of yeast alcohol dehydrogenase lies in a hydrophobic area of the protein.

Inhibition by N^1-alkylnicotinamide chlorides has been used as an experimental tool for locating hydrophobic regions of importance in the binding processes of other dehydrogenases. For example, in the case of horse liver alcohol dehydrogenase, the alcohol dehydrogenase, the nicotinamide derivatives appear to interact with the substrate binding site. With bovine liver glutamic dehydrogenase, the inhibitors are bound at an effector site presumably involved in the stabilization of one of the monomeric conformers of the enzyme. Beef heart and rabbit muscle lactic dehydrogenases, on the other hand, are not inhibited by N^1-alkylnicotinamide chlorides except at very high concentrations where extensive denaturation occurs. Studies are currently underway to investigate the importance of these nonpolar regions in the catalytic processes involved.

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THE ROLE OF LIPIDS IN MEMBRANE TRANSPORT IN MYCOPLASMA LAIDLAWII

P. F. Smith, PhD

Essentially all of the lipids of *Mycoplasma laidlawii* are located in the cytoplasmic membrane, the only integument enclosing the organism. These lipids consist of neurosporene; a dihydroxycarotenol; the acetate ester and the β-D-glucoside of this carotenol; phosphatidyl glycerol; phosphatidyl glucose, which yields upon deacylation α-glycerophosphoryl-1-(α,β)-D glucose; monoglucosyl diglyceride which yields upon deacylation 0-α-D-glucopyranosyl-(1→1) D-glycerol; diglucosyl diglyceride, the deacylation product of which is 0-α-D-glucopyranosyl-(1→2)-0-α-D-glucopyranosyl-(1→1)-D-glycerol.

Enzymes involved in the degradation of the carotenyl acetate and the carotenyl-β-D-glucoside likewise are membrane-associated. Incomplete evidence suggests that all the enzymes involved in synthesis and degradation of the carotenyl ester and glucoside and phosphatidyl glucose are membrane associated. *M. laidlawii* is capable of glucose degradation to acetate by virtue of intracellular enzymes.

Pulse labeling of glucose metabolizing organisms with ^{14}C-glucose results in the incorporation and subsequent loss of radioactivity in carotenyl glucoside, carotenyl ester and phosphatidyl glucose. The same result is noted with phosphatidyl glucose when inorganic ^{32}P is used with unlabeled glucose. None of the other lipids become labeled except diglycosyl diglyceride which fails to lose the label following removal of exogenous ^{14}C glucose. The rate of $C^{14}O_2$ evolution generally is equivalent to the rate of disappearance of ^{14}C from the total lipids. Inhibition of β-glucosidase activity inhibits glucose turnover in the lipids and inhibits glucose metabolism.

These and other data suggest a role for the glucosyl lipids, the carotenyl ester and the enzymes involved in their synthesis and degradation in the transport of glucose into the cell and the transport of the end product of glucose metabolism, acetate, out of the cell. A schematic model of the cell membrane has been constructed which is compatible with current knowledge about the structure of the membrane and its function in selective permeability.

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MEASUREMENT OF MACHINE AND DETERGENT EFFICIENCY IN DRYCLEANING

W. H. Smith, Manfred Wentz and A. R. Martin

In a continuous flow system of drycleaning the concentration of insoluble soil suspended in the solvent in a washer cylinder increases from zero to a maximum and then decreases with time. The soil concentration approaches zero if a sufficient number of solvent changes occur to pump out the washer. The decrease in concentration from the maximum follows the mass transport law while the increase to the maximum depends on the detergency of the solvent-detergent solution. Data for the concentration-time curve can be obtained by removing samples from the washer at various time intervals and determining the quantity of soil in suspension by millipore filtration. The total quantity of soil removed from the load can be computed by integrating the curve graphically, and comparing the area with that of curves obtained with known quantities of soil.

If a known quantity of insoluble soil is placed on a load the percentage of soil removal can be computed. By this means the effectiveness of various detergents in releasing insoluble soil can be compared. The method is more accurate than reflectance methods for measuring removal of insoluble soil because it is direct and gravimetric. Assessment of percentage removal of solids from fabrics by reflectance involves assumptions that are not always valid in drycleaning systems.

Examples illustrating this technique are given using various detergents and soils. The method permits the evaluation of the washing efficiency of different machines and machine cycles. Examples illustrating this are also described.

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IMPROVEMENTS IN DETERGENCY PRECISION WITH RADIOACTIVE SOIL

W. T. Shebs and B. E. Gordon

With the development of precise and accurate radiochemical methods for the analyses of doubly labeled artificial soil left on washed fabric has come the need to improve the precision and accuracy of the laundering step. Using the Tergetometer as the laundering instrument a systematic study was carried out to determine the causes of low precision and accuracy and the elimination, or at least the reduction, of these sources of error.

The sine qua non of this study has been that of closure; i.e., the soil found in the wash water plus that remaining on the washed fabric had to equal the amount present on the unwashed fabric. The results have shown that it is now possible to more closely approach the precision and accuracy inherent in the analytical method by simply analyzing the wash water, an analysis which would be very difficult by conventional methods but is straightforward by radiochemical methods.

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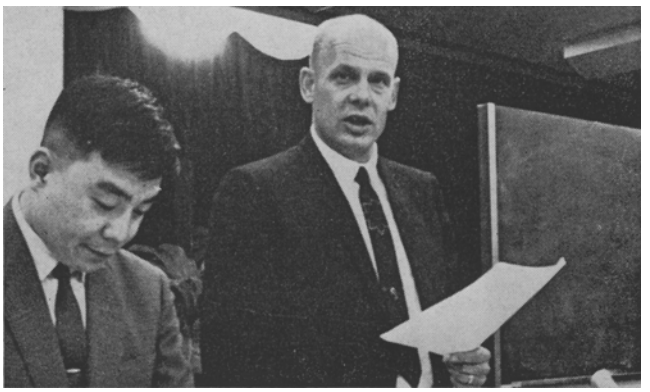
ANALYSIS FOR SULFATE ION IN THE BIODEGRADATION OF ANIONIC DETERGENTS

T. C. Cordon, E. W. Maurer, O. Panasiuk and A. J. Stirton

An analytical method for sulfate ion would be useful to follow the course of biodegradation of organic sulfates and sulfonates and, in

(Continued on page 362A)

NRA Sponsors Seminars on Soap Marketing



Jack Northrup addresses seminar.

Jack Northrup, Vice President of Hunt-Wesson Foods and former Vice President of Purex Corporation recently conducted a series of Seminars on the marketing and distribution of soap in the Far East under the sponsorship of the National Renderers Association.

The original program scheduled four sessions in Osaka, four in Tokyo, and two in Taiwan. Because of the enthusiastic response of his audiences, however, additional seminars were scheduled and his entire lecture was videotaped so that other interested audiences might benefit from the sessions after his return to the U.S.

Northrup spoke to groups made up of soap manufacturers, margarine and shortening manufacturers, wholesalers, and distributors.

The National Renderers Association maintains a Far East office and Staff headquartered in Tokyo. International Headquarters are located at 3150 Des Plaines Avenue, Des Plaines, Illinois 60018.