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GLASS FIBER PAPER IMPREGNATED WITH SILICIC ACID AS A NEW CHROMATOGRAPHIC TOOL

In attempting to separate saturated mono-, di-, and triglycerides by paper chromatography, it was found difficult to locate the spots, because the paper is destroyed by the drastic tests necessary to locate these compounds. To overcome this difficulty, a fine glass fibre filter paper was obtained, which, when impregnated with silicic acid, was found to have chromatographic properties similar to that of silicic acid columns.

Fillerup and Mead (1) were able to separate a mixture of triglycerides, fatty acids, cholesterol and cholesterol esters on a silicic acid column using increasing amounts of ethyl ether in petroleum ether as eluting solvents. It was found in this laboratory that mono-, di-, and tripalmitin, cholesterol and cholesterol acetate can be separated on glass paper impregnated with silicic acid using a developing solvent consisting of a 2% ethyl ether in isooctane. Typical R_f values obtained were as follows: 1-monopalmitin, 0.05; dipalmitin, 0.27; cholesterol, 0.41; tripalmitin, 0.79; cholesterol acetate, 1.0.

The location of the sterol spots was accomplished by spraying one side of the chromatogram with the Liebermann-Burchard reagent followed by heating over an electric hot plate with exposed heating element. Cholesterol and cholesterol acetate appeared as bright pinkish-red spots on a white background. All areas containing carbon compounds were located by spraying the reverse side of the chromatogram with a dichromate-sulfuric acid-water solution followed by heating over the hot plate. All areas containing carbon compounds appeared as a light

to dark greyish-black spots on a yellowish-orange background. The color of the spot depended in large measure upon the amount of carbon present.

This technique is being adapted to the separation of other groups of compounds. The details of the procedure will be published later.

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References

1. D. L. Fillerup and J. F. Mead, Proc. Soc. Exptl. Biol. and Med. 83:574 (1953).