

This Week's Citation Classic

Privett O S, Blank M L, Coddling D W & Nickell E C. Lipid analysis by quantitative thin-layer chromatography. *J. Amer. Oil Chem. Soc.* **42**:381-93, 1965. [Hormel Inst., Univ. Minnesota, Austin, MN]

Techniques for the quantitative analysis of the lipid classes by **thin-layer chromatography** (TLC) are reviewed, and the analysis of charred spots **directly on chromatoplates** by photodensitometry is described. Analysis of the lipid classes by **this technique** is compared to **that by DEAE cellulose column chromatography**. [The SC® indicates that this paper has been cited over 150 times since 1965.]

Orville S. Privett
Hormel Institute
University of Minnesota
Austin, MN 55912

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"Although TLC has proven to be of tremendous value for the separation and fractionation of lipids for identification and preparative purposes, it has not been completely satisfactory for quantitative analysis. In the article cited, we reviewed a variety of techniques that have been adapted to the quantitative analysis of lipids by TLC, including indirect methods which involve recovery of individual spots from chromatoplates and analysis by conventional analytical methods as well as methods of spot analysis directly on chromatoplates. Our article appears to have been popular because it focused on the existing state of knowledge and described several new techniques that offered potential for further development.

"The main impetus for this article came from the photodensitometry-charring technique that was developed in our laboratory. However, because it was highly empirical and depended on a number of factors that had to be controlled, it required considerable skill on the part of the analyst. Merle Blank, who has excellent mechanical and analytical skills, developed the method to a high degree of precision and we used

it extensively in our research for analysis of the lipid classes.

"The best method for determination of the lipid classes at this time was the column techniques developed by George Rouser and his colleagues. These techniques were very cumbersome and time consuming, hence it was of considerable interest to determine if our TLC method could be combined with column chromatography to provide a more rapid method for the analysis of these compounds. Through correspondence with George and discussions at several meetings, it was agreed that we should come out to his laboratory at the City of Hope Hospital in Duarte, California, and demonstrate our method. Accordingly, upon arrangement with Rouser, I loaded our TLC-adapted densitometer (there were no densitometers specifically for TLC at that time) into the trunk of my car in Austin (Minnesota) and hauled it out to California. Merle Blank followed by plane. When we got to Duarte, much to our surprise, Rouser had already purchased the basic model of our densitometer (one designed for paper) and had it set up. It was apparent that although Rouser had been critical of our technique, he believed us. I did not unpack our instrument because it was a simple matter to make the necessary modifications of his instrument. Within two weeks, which was the time we had given ourselves to set up the TLC method, the work with Rouser and his colleagues led to the development of an improved procedure utilizing a combination of column and TLC for the analysis of the lipid classes of the most complex lipids. This work led to a joint publication of the method¹ and to the present paper in which we reviewed the quantitative analysis of the lipid classes by TLC and other techniques, such as autoradiographic and descending TLC, that were under development in our laboratory."

1. Rouser G, Galli C, Lieber E, Blank M L & Privett O S. Analytical fractionation of complex lipid mixtures: DEAE cellulose column chromatography combined with quantitative thin-layer chromatography. *J. Amer. Oil Chem. Soc.* **41**:836-40, 1964.