

This Week's Citation Classic

Reitman S & Frankel S. A colorimetric method for the determination of serum glutamic oxalacetic and glutamic pyruvic transaminases.
Amer. J. Clin. Pathol. **28:** 56-63, 1957.

A simple method for the estimation of transaminase activity in serum takes advantage of the differences in the extinction coefficients of alkaline solutions of the 2,4-dinitrophenyl-hydrazones of alpha-ketoglutarate, oxalacetate, and pyruvate, permitting the reaction rate to be measured by determining the timed change in absorbancy. [The *SCF*[®] indicates that this paper has been cited 1304 times since 1961.]

Sam Frankel
Midwest Medical Laboratory
4141 Forest Park Blvd
St. Louis. MO 63108

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"Both Dr. Reitman and I are extremely pleased to be asked to submit a brief summary of the events leading to the development of our transaminase procedures.

"The key factor responsible for the decision to devise a method sufficiently simple to be used in any laboratory was a patient incorrectly diagnosed as having had an acute myocardial infarction. The diagnosis had been made solely on clinical grounds, since the services of an electrocardiogram and of cardiac enzyme assays were not available in his home town. The patient was instructed to drastically curtail his activity, and felt compelled to sell his business. When subsequently he was seen at the Jewish Hospital of St. Louis, however, the diagnosis was not confirmed.

"Shortly after the appearance of an article by Karmen¹ describing a method for measuring transaminase activity in serum, Chinsky and Shmagranoff,² residents in medicine at Jewish Hospital, initiated an

extensive project which supported the importance of this test in the diagnosis of acute myocardial infarction. Reitman, also a resident in medicine at that time, remarked that the patient might have been spared serious consequences if a simple test had been available to the physician in that small town. The Chief of Medicine, hearing of this comment, suggested that he begin work on such a procedure. I was then Director of Clinical Chemistry at the hospital, and was contacted for assistance in developing a method that would be simple enough to be run in any medical laboratory without the need of special equipment.

"In making the procedure simple, a few rules of 'good' chemistry were either broken or severely bent. It developed that the reagents required were very critical and there was fear that some laboratories would have difficulty in their preparation. Therefore, it was decided to request the assistance of the Sigma Chemical Company.

"A survey indicated that at one time 95% of all laboratories performing the tests were using the Reitman-Frankel procedures, and current information shows that they are still in use today, more than twenty years later. In our opinion, this remarkable popularity can be attributed to the Sigma Chemical Company, which was the first to manufacture the reagents and standards necessary for good performance.

"Perhaps the most pleasing reward from this entire experience has been seeing the methods in use throughout the world. Although it was originally intended that they would fill a need of the smaller laboratories until such time as better equipment and techniques became available, it is gratifying that not only was the original purpose accomplished, but that they still find considerable use in many areas of this country and abroad."

1 **Karmen A.** A note on the spectrophotometric assay of glutamic oxalacetic trans aminase in human blood serum. *J. Clin. Invest.* **34:**131-3, 1955

2 **Chinsky M., Shmagranoff G L & Sherry S.** Serum transaminase activity
J. Lab. Clin. Med. **47:** 108-18, 1956.