

Lawrence Berkeley National Laboratory

Recent Work

Title

TRITIATED STEARIC ACID

Permalink

<https://escholarship.org/uc/item/5bf6t6sr>

Authors

Rosenthal, Donald J.
Kritchevsky, David.

Publication Date

1951-06-06

UNCLASSIFIED

UNIVERSITY OF CALIFORNIA - BERKELEY

TWO-WEEK LOAN COPY

*This is a Library Circulating Copy
which may be borrowed for two weeks.
For a personal retention copy, call
Tech. Info. Division, Ext. 5545*

RADIATION LABORATORY

DISCLAIMER

This document was prepared as an account of work sponsored by the United States Government. While this document is believed to contain correct information, neither the United States Government nor any agency thereof, nor the Regents of the University of California, nor any of their employees, makes any warranty, express or implied, or assumes any legal responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by its trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof, or the Regents of the University of California. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof or the Regents of the University of California.

UNIVERSITY OF CALIFORNIA

Radiation Laboratory

Contract No. W-7405-eng-48

TRITIATED STEARIC ACID

Donald J. Rosenthal and David Kritchevsky

June 6, 1951

Berkeley, California

TRITIATED STEARIC ACID

Donald J. Rosenthal(*) and David Kritchevsky

Radiation Laboratory

University of California, Berkeley(**)

ABSTRACT

June 6, 1951

Tritium-labeled stearic acid of high specific activity has been prepared in good yield.

(*) Dazian Foundation Fellow 1950-1951.

(**) The work described in this paper was sponsored by the U. S. Atomic Energy Commission.

TRITIATED STEARIC ACID

Donald J. Rosenthal* and David Kritchevsky

Radiation Laboratory

University of California, Berkeley**

In order to carry out experiments involving fat metabolism in experimental atherosclerosis it was desirable to obtain pure, labeled fatty acid or fat. Inasmuch as a fatty acid such as stearic acid could be used as such or easily converted to triglyceride, this acid was chosen for labeling. The availability of tritium labeled water and the ease of incorporation of this radioactive material in good yield influenced us to use this method of labeling.

The method used was that worked out for deuterium labeling of fatty acids¹. By this method, it was possible to obtain 36% of the equilibrium amount of tritium incorporated into the stearic acid. The acid was recovered quantitatively in the impure state; recrystallization yielded 95% of starting quantity with specific activity of 10.8 $\mu\text{c}/\text{mg}$.

(*) Dazian Foundation Fellow 1950-1951.

(**) The work described in this paper was sponsored by the U. S. Atomic Energy Commission.

(1) W. E. van Heyningen, D. Rittenberg and R. Schoenheimer, J. Biol. Chem. 125, 495 (1938).

Experimental: One gm. of platinum oxide and two cc. of tritiated water were introduced into a glass tube and the catalyst was reduced in a stream of hydrogen. The hydrogen was flushed from the tube with nitrogen and, after several sweepings, stearic acid (7.5 g.), potassium hydroxide (100 mg.) and additional tritiated water (9 cc., 47 mc/cc) were added. The tube was evacuated, sealed and shaken at 135° for 200 hours. After the shaking period, the tube was opened, attached to a vacuum line and pumped free of liquid. In all 10.9 cc (99%) of the initial water charge was recovered. The dried residue was dissolved in ether-benzene, acidified and filtered through celite to remove catalyst. Evaporation of solvent left 7.5 gm. of crude material. The crude stearic acid was recrystallized from ethanol-water.

The specific activity of the pure acid was found to be 81.1 mc., corresponding to 10.8 μ c/mg. The yield of pure acid was 7.1 gm. (95%).

SUMMARY

Tritium-labeled stearic acid of high specific activity has been prepared in good yield.

ACKNOWLEDGMENT: One of us (D. J. R.) gratefully acknowledges a grant-in-aid from the Sara Welt Fund.