

# Lawrence Berkeley National Laboratory

## Recent Work

### Title

DETECTION OF STEROIDS IN PAPER CHROMATOGRAPHY

### Permalink

<https://escholarship.org/uc/item/6m392350>

### Authors

Kritchevsky, David  
Kirk, Martha R.

### Publication Date

1951-03-26

UCRL- 1198

UNCLASIFIED

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.

UCRL-1198  
Unclassified - Chemistry Distribution

UNIVERSITY OF CALIFORNIA

Radiation Laboratory

Contract No. W-7405-eng-48

**UNCLASSIFIED**

DETECTION OF STEROIDS IN PAPER CHROMATOGRAPHY

David Kritchevsky and Martha R. Kirk

March 26, 1951

Berkeley, California

DETECTION OF STEROIDS IN PAPER CHROMATOGRAPHY

by

David Kritchevsky and Martha R. Kirk

Radiation Laboratory and Department of Chemistry, University  
of California, Berkeley, California (\*)

ABSTRACT

March 26, 1951

The methods available for detection of steroids in paper chromatography have been summarized.

---

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

---

DETECTION OF STEROIDS IN PAPER CHROMATOGRAPHY

by

David Kritchevsky and Martha R. Kirk

Radiation Laboratory and Department of Chemistry,  
University of California, Berkeley(\*)

The usual color tests for detection of steroids, many of which involve the use of corrosive acids, are not applicable to the detection of these compounds in paper chromatography. This report is an effort to systematize the current knowledge concerning the easy detection of steroids in paper chromatography. The methods listed below have all been applied in paper chromatography using "Quilon"-treated paper (1) with varying degrees of success. Several of these tests, which are negative or faint when applied to "Quilon"-treated paper, can, presumably, be used with untreated paper with good results.

The detection of many of these compounds through their ultraviolet absorption is difficult, if not impossible, when applied to "Quilon"-treated paper. It should work well with ordinary filter paper and probably can serve as a method of detection in papers treated with other impregnating materials.

A. Iodine - Various iodine reagents give the most satisfactory results.

These are:

---

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

---

1. Suspending the paper above iodine vapor. The spot is visible as the iodine color fades from the paper. This may be followed by a spray of saturated KI in methanol, then by a starch solution. The spot may show up darker blue than background, but generally is more clear on the reverse side of the paper where there is no interfering background color.
  2. Dip paper in a saturated solution of  $I_2$  in petroleum ether. (Can follow with KI and starch as above.)
  3. Spray paper with saturated solution of  $I_2$  in petroleum ether. (Can follow with KI and starch as above)
  4. Suspend paper above solution of  $I_2$  in chloroform heated to ca.  $40^\circ$ , (Can follow with KI and starch as above.)
  5. Spray with solution of 0.2 g.  $I_2$  and 2 g. KI in 200 cc. water. May follow with starch. (2).
- B. Bromine - Suspend paper above 2% solution of  $Br_2$  in chloroform at  $40^\circ$ . (3). May follow with KI and starch spray.
- C. Trinitrobenzene in alcohol followed with 1 N sodium hydroxide.
- D. Picric acid in alcohol followed with 0.1 N sodium hydroxide.
- E. Ammoniacal silver reagent (for cortical steroids). (4)
- F. 30% Zinc chloride in anhydrous methanol. Follow by heating to  $130^\circ$  in oven. (5).
- G. Spray with 15-25% of  $SbCl_5$  in chloroform.
- H. Spray with a 15-25% solution of silicotungstic acid in alcohol. Follow by drying in oven for one or two minutes. (6). Longer time may destroy sprayed portion of the paper.

## SUMMARY

The methods available for detection of steroids in paper chromatography have been summarized.

-O-O-O-O-O-O-O-O-O-

## REFERENCES

- (1) Kritchevsky and Calvin, J. Am. Chem. Soc., 72, 4330 (1950).
- (2) Munier and Macheboeuf, Bull. soc. chim. Biol., 31, 1144 (1949).
- (3) McMahon, Davis and Kalnitsky, Proc. Soc. Exptl. Biol. Med., 75, 799 (1950).
- (4) Zaffaroni, Burton and Keutmann, Science, 111, 6 (1950).
- (5) Nyc, Garst, Freidgood and Maron, Arch. Biochem., 29, 219 (1950).
- (6) Montignie, Bull. soc. chim., 51, 690 (1932).