editorial

PURITY OF RADIOCHEMICALS

Radioactive lipids are frequently highly impure when received from the manufacturer or supplier. Their direct use in scientific investigations, without further purification, has led in the past to serious misinterpretations of chemical and physiological processes. Even though there has been marked improvement recently in the purity of radiochemicals, the individual research worker is still well advised to check the purity of every sample, and to purify it, when necessary, before employing it in his investigation.

Detailed specifications for radiopurity, similar to those for unlabeled compounds, have not yet been formulated by any national or international bureau of standards. But certain guidelines can be recommended. The investigator should check the purity of radioactive compounds on receipt and periodically thereafter. This procedure would provide a supplement to the information on purity provided by the supplier and indicate whether any decomposition has occurred as a result of self-radiation. It is often because of the last-mentioned phenomenon that the investigator is unable to put his trust completely in the evidence of high purity provided, especially if compounds of high specific activity are used. Helpful reviews of work on decomposition by self-radiation are now available (1, 2).

Fortunately, in every lipid laboratory there are at hand two excellent methods of assessing purity: thin-layer and gas–liquid chromatography. Because these methods are quick and simple, they can easily be applied to each new batch of material and also can be used for periodic checks. Furthermore, the same methods can be employed with little or no modification to purify the relatively small quantities of labeled substances that are required in many studies. The use of thin-layer chromatography for this purpose has been described in two recent texts by Mangold and coworkers (3, 4). Extremely useful techniques for determining radioactivity on silica gel samples scraped from thin-layer plates, without the necessity for elution, have been developed (5–7).

Whatever means be used, it remains at present the responsibility of each investigator to establish radiopurity and to determine if any unlabeled contaminants are present in the sample. *In future we shall ask authors of articles to be published in this journal to specify what they have done to investigate and insure the purity of radioactive compounds used in their study*, with attention to the degree of purity required for proper interpretation of results.

It is hoped that the routine application of such checks will make investigators aware of the frequency with which impurities occur; that investigators will inform manufacturers of any shortcomings in this regard, together with suggestions they may have for improvement; and that the cumulative experience of research workers will eventually lead to the establishment of standards and specifications for pure labeled compounds.

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REFERENCES

1. *Stability of Labelled Organic Compounds*, The Radiochemical Centre, Amersham, Bucks., England, distributed by Nuclear-Chicago, Des Plaines, Ill., 1965.
2. Tolbert, B. M. *Advan. Tracer Methodology* **1:** 64, 1965.
3. Mangold, H. K. In *Thin-layer Chromatography*, edited by E. Stahl. Springer-Verlag, Berlin, 1965, pp. 58–72.
4. Mangold, H. K., R. Kammereck, and D. C. Malins. In *International Symposium on Microchemical Techniques, 1961, Microchem. J. Symp. Ser. 2.* Interscience, New York, 1962, pp. 697–714.
5. Snyder, F., and N. Stephens. *Anal. Biochem.* **4:** 128, 1962.
6. Brown, J. L., and J. M. Johnston. *J. Lipid Res.* **3:** 480, 1962.
7. Snyder, F., and H. Kimble. *Anal. Biochem.* **11:** 510, 1965.