

BOOK REVIEWS

Review -- Radiopharmaceuticals and Other Compounds Labeled With Short-Lived Radionuclides. M. Welch, ed

This volume is a reprinting of a special issue of the Journal of Applied Radiation and Isotopes which first appeared in 1977, but is now being made available in current form to non-subscribers of the journal. It is basically a series of reviews of uses, production methods, and syntheses with various nuclides of radiopharmaceutical interest having "short" half-lives (here defined as less than four days). Generally, the review papers are followed by several shorter ones giving examples of such uses and production methods. Of the total of 23 papers, seven are such reviews, and two others are concerned with general problems in this field, such as physical vs. biological half-life, and quality control in the production of these radiopharmaceuticals.

Bearing in mind that these papers were originally written in early 1976, the reviews are generally quite useful with regard to the state of the art at that time. The completeness of coverage varies somewhat among them, with the article on ^{11}C , by Wolf and Redvanly, being particularly comprehensive (217 references are cited). Among the review articles, that on ^{18}F is the least comprehensive (80 references), although in general the uses of this nuclide at that time are well covered by the content of the paper. It is the one specific nuclide reviewed for which no follow-up papers giving examples are included, but this is not a serious lack here because of the very rapid development in the use of ^{18}F since early 1976. The other nuclides specifically reviewed include ^{13}N , ^{15}O , $^{99\text{m}}\text{Tc}$, ^{77}Br , and ^{123}I , and ^{67}Ga , ^{68}Ga , ^{111}In , and $^{113\text{m}}\text{In}$, with the coverage of $^{99\text{m}}\text{Tc}$ (Eckelman) and the gallium and indium nuclides (Hnatowich, and Thakur) being particularly complete. The general introduction (Harper), and the article on quality control (Krohn) are also particularly useful and worth reading.

The articles covering specific examples of the uses of these nuclides are variable in their interest and generally cover material that has been published later in one form or another, although it is useful to have some of this work published in one place and in conjunction with the more complete review articles. But as an example of the problem of keeping such material up-to-date, and therefore of timely interest to readers of such a volume, the very good paper on the preparation of $^{11}\text{CH}_3\text{I}$ and H^{11}CHO by Comar's group might be cited. At the time it was originally written, the specific activity of the formaldehyde produced in this way was stated as maximum of 30 mCi/ μmole , although a footnote of unspecified date indicates that this had been increased to 100 mCi/ μmole . At that time, H^{11}CHO with a specific activity of 150 mCi/ μmole had been produced by a somewhat different catalytic method at Brookhaven, but more to the point at the time of writing of this review the Comar group has produced this compound with a specific activity of as much as 2 Ci/ μmole . The means of doing this have been discussed and published elsewhere recently, but in effect this means that the content of this paper is really obsolete at this time, and a group wishing to produce this material would be well advised to ignore it and contact the authors for the latest results in this area. This is probably an extreme example of the inherent timeliness problem in this field, but it does make one ponder somewhat the advisability of including many such specific papers in a compendium of this sort.

In any case, this is a volume which should be owned by workers in this field, primarily for the generally excellent review articles which permit easy access to the extent of previous work done with these nuclides -- a very large amount of it, dating back to 1934 in the case of carbon-11 and to about 1940 for ^{18}F .

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