

BOOK REVIEW

STUDIES OF CELLULAR FUNCTION USING RADIOTRACERS. Ed. Mervyn W. Billinghamurst (Ed. in Chief: Lelio G. Colombetti) pp.250 Pub. CRC Press Inc., Boca Raton, Florida, USA 1982.
ISBN 0-8493-6025-0 Price: \$84.95 Prepub.

This text is another in the series relating to the uses of radiotracers in biology and medicine and consists of 9 Chapters. Each Chapter is a mini-review of a specialist topic each with a good number of supporting references, making a total reference listing of 891 up to and including the year 1979.

Chapter 1 (B.M. Gallagher) broadly discusses the important topic of glucose metabolism in the brain using ^{14}C - and ^{18}F -labelled glucose derivatives (2-deoxy-D-glucose, 3-O-methyl-D-glucose, and 2-deoxy-2-fluoro-D-glucose). A short discussion of the uses of ^{18}F -labelled 2-deoxy-2-fluoro-D-glucose in positron emission transaxial tomography is also included.

Chapter 2 (Mrinal K. Dewanjee) discusses a wide variety of tracers in studies of the mechanism and location of radiotracers in the myocardium. These include potassium ions (and analogues), fatty acids, glucose, amino acids, metal chelates, labelled antibodies, thallium-201 for ischemia, $^{99\text{m}}\text{Tc}$ -labelled microspheres, ^{131}I -labelled macroaggregates and Xenon-133 for regional perfusion studies and the development of collateral circulation.

In Chapter 3 (A.R. Fritzberg) special emphasis is given to the evaluation of hepatocyte function using $^{99\text{m}}\text{Tc}$ -labelled iminodiacetate complexes. Chapter 4 by the Editor (M.W. Billinghamurst) provides an excellent review on radioion exchange in bone and discusses the function of each distinct type of bone cells (osteoblasts, osteoclasts and osteocytes). Uptake of the alkaline earths, rare earths, ionic gallium lead and fluoride by bone on the hydroxyapatite crystals, is also discussed. The mechanism of uptake of labelled phosphorus compounds is still a debatable issue and information assembled lends some support that specific enzymes are involved. Chapter 5 (J.S. Arnold) is also concerned with bone, in this case the mechanisms by which radiopharmaceuticals are fixed in bone imaging studies, especially when using the $^{99\text{m}}\text{Tc}$ -phosphate bone imaging agents.

Chapter 6 (L.R. Chervil and M.D. Blaurock) provides a good review of well established studies of renal secretion and filtration.

Chapter 7 (D.M. Lyster) is a short four pages review of radiopharmaceuticals in the study of the pancreas and the prostate highlighting the deficiencies of the familiar ^{75}Se -selenomethionine (pancreas) and zinc (prostate) as tracers.

Mechanisms of localisation, specificity and metabolism of adrenal gland imaging agents are reviewed in Chapter 8 (M.D. Gross, D.P. Swanson, D.M. Wieland and W.M. Beierwaltes). Radioiodinated derivatives of cholesterol, including the 19-iodinated derivatives, are familiar and well documented and discussed in other texts, as also are the ^{75}Se -labelled derivatives which are reportedly to result in lower patient doses. There is a good section in this chapter on the newer approaches to adrenal medullary imaging through the use of neuronal blocking agents such as bretylium. A series of potentially useful iodinated bretylium analogues are discussed in this context.

The final Chapter 9 (Y. Tano) is a very well written review of the trapping and metabolism of radioisotopes by the thyroid. It considers not only radioiodine but also [$^{99\text{m}}\text{Tc}$]pertechnetate, ^{201}Tl , ^{75}Se , ^{67}Ga and ^{137}Cs . Although there is a comprehensive Subject Index, an index of compounds would have been a useful addition. There are numerous figures (many reproduced from other text with permission) and photographs all reproduced in good quality and definition. However, the text covers such a wide range of topics each of which are quite complex, it is therefore difficult for any one reviewer to highlight any special imperfections in the arguments and conclusions. In this respect, readers will appreciate that this review is more of a guide to the usefulness of the contents than a critique of the data presented. References include the full title of papers which is useful.

In general a useful reference text and although much of the data has been published elsewhere it nevertheless serves to pull the topics together in a comprehensive and interesting format. It will be of especial interest to all those studying or involved with radiopharmaceuticals and research aspects of nuclear medicine.

E. Anthony Evans, Ph.D.,
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