

BOOK REVIEWS

STABLE ISOTOPES IN NUTRITION

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Edited by Judith R Turnlund and Phyllis E Johnson, U.S Department of Agriculture

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This book is based on a symposium held 28 August–2 September 1983 and sponsored by the American Chemical Society. It focuses on the chemistry and the instrumentation employed in the analysis of isotopically enriched samples as used in the study of nutrition.

The book comprises fourteen chapters and 354 references which describe the techniques using stable isotopes that are becoming increasingly adopted by nutritionists to study human metabolic processes. Comparisons are made with data obtained using radioisotopes and the benefits of the use of stable isotopes highlighted.

Labelling with stable isotopes allows the use of foods which have been prepared using normal handling and processing methods in routine human studies. The methods involved can be complementary to the more classical methods using radioactive isotopes.

Four chapters in the book describe the use of mass spectrometry and nuclear magnetic resonance spectroscopy to detect compounds labelled with the stable isotopes of carbon (^{13}C) and hydrogen (^2H), including one chapter on the use of labelled glucose, a technique which could find wider application in the medical field.

The bulk of the book discusses those techniques used for the measurement of the dietary availability and turnover of the trace elements (calcium, zinc, selenium, magnesium, copper and iron). Descriptions of the instrumental methods used, i.e. mass spectrometry (electron-impact ionisation, thermal ionisation and fast atom bombardment), Mössbauer spectroscopy and neutron activation analysis, are given as well as detailed information on sample collecting and handling, and on the analysis of results.

The last two chapters of the book discuss the analysis of stable carbon isotope ratios of bone collagen extracted from human skeletal remains in order to study prehistoric human diet.

The information presented in the book will be of considerable interest and value to nutritionists unfamiliar with the applications of stable isotopes in their work and also to other researchers interested in the techniques used in the analysis of stable isotopically labelled compounds.

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Isotopes in Organic Chemistry. Edited by E Buncl and C C Lee
Volume 6. Isotopic Effects : Recent Developments in Theory and Experiment

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This series has by now become firmly established and the present volume, which will have a much wider readership than merely the organic chemistry community, will contribute further to the process. The first chapter by Forsyth deals with the issue of isotope effects on ^{13}C nmr shifts and coupling constants. This is done mainly from a factual point of view and there is much information here to those interested in using isotope effects in assigning nmr signals and as a potential source of structural information.

Although the effect of pressure on reaction rates in solution has been the subject of extensive study only recently has it been appreciated that the pressure dependence of primary hydrogen isotope effects can be used as an additional probe of transition state structure. By taking eight reactions which have been the subject of much study, in this second chapter Isaacs discusses the additional information that has been obtained from the variation of $k^{\text{H}}/k^{\text{D}}$ with pressure. Such studies can be particularly informative when tunnelling factors are thought to be important.