

BOOK REVIEWS

Annual Review of Nutrition 1994. Robert E. Olson (ed.). Annual Review Inc., 4139, El Camino Way, Palo Alto, California 94303-0897, P.O. Box 10139, USA. Volume 14. pp. 595.

Annual Review of Nutrition publishes critical and provocative reviews on diverse aspects of nutrition, the stress being on basic sciences. Thus, like the earlier volumes, in the present volume also, 13 out of the 23 reviews (55%) deal with basic science subjects. Eight reviews in clinical nutrition also give good coverage to basic aspects. Only two reviews deal with epidemiology and public health aspects of nutrition. Such a distribution may disappoint public health nutritionists.

The prefatory chapter by John Waterlow on Childhood Malnutrition in Developing Nations has a touch of nostalgia. Six decades after the description of kwashiorkor by Cecely Williams (1930), basic questions on several aspects of protein-energy malnutrition, like molecular mechanisms in the pathophysiology of clinical forms of protein-energy malnutrition, the functional significance of stunting, the energy and protein requirements of children, and the contribution of infection to growth failure, remain. The author addresses these issues with his masterly insight into the subject. The second review on a public health subject by Hunter and Willett discusses the epidemiological studies which attempt to correlate breast cancer with diet and body build. While a modest association between alcohol consumption and breast cancer emerges, the often-mentioned relationship of breast cancer with dietary fat is insignificant. International variations in breast cancer rates are perhaps due to differences in energy intake and growth restriction during the period of growth.

According to Fuller and Garlick, the controversy regarding amino acid requirements of humans is due to the different results obtained by the three methods commonly used, viz. nitrogen balance, obligatory nitrogen losses and amino acid oxidation. Nitrogen balance studies overestimate nitrogen retention and hence underestimate amino acid requirements. Issues for future work are mentioned. Peptides have a role in specific diseases where enteral feeding is needed. The mechanisms of peptide uptake and metabolism are reviewed by G. K. Grimble.

Nutrients like choline, carnitine and inositol are staking claims as essential dietary factors in the light of recent knowledge regarding their precursors and functions. A strong case for choline has been made by Leisel and Blusztajn. Some nutrients like vitamin C, vitamin E and β -carotene, which are powerful antioxidants, have been reported to have beneficial effects in a variety of degenerative diseases when given in large doses. The pharmacology of vitamin C has been reviewed by Sauberlich.

A review of organic substrate and electrolyte solutions for oral rehydration (ORS) in diarrhoea should interest both clinical and public health nutritionists. From a metaanalysis of the available data, Desjeux *et al.* conclude that local cereals and legumes are as good as ORS that are based on glucose or other organic defined substrates. Mother's milk is the best for the infant. While it may be possible to develop formula milk which matches human milk in terms of its nutrients, human milk has a variety of growth factors like the epidermal growth factor, insulin, relaxin, insulin-like growth factors and other peptide growth factors which help development. Thus, even a well-growing, formula-fed infant is at a greater risk of developing various illnesses during early adulthood than the breast-fed counterpart, as discussed by Donovan and Odle.

Other subjects of clinical importance covered are: Nutritional implications of transthyretin (prealbumin) in health and disease (Ingenbleek and Young) and osteopaenia of prematurity (P. R. Greer).

Two of the basic science reviews are in the field of comparative nutrition—Nutrition of the horse (Hintz and Gymbaluk) and Nutritional mechanisms and temporal control of migratory energy accumulation in birds (Bairlein and Gwinner). A review on artificial rearing of rat pups by Patel *et al.* discusses the methodology as well as the utility and limitations of such an experimental technique.

In recent years, several nutrients have been found to regulate gene expression. In the present volume, Clarke and Jump discuss the regulation of gene expression by dietary polyunsaturated fatty acids, and Cousins discusses the role of metal elements in gene expression. Dietary PUFA modulate fatty acid biosynthesis and (n-9) fatty acid availability, possibly by modulating the activity of transcription factors. Apart from the influence of metals

in gene expression through their well-established structural and catalytic functions, metals have a separate function in transcriptional regulation of genes through an interplay of cytosolic metal regulatory proteins and MRE sequences in the promoter regions of specific genes.

An update on the three disorders related to inborn errors of fructose metabolism (essential fructosuria, hereditary fructose intolerance and fructose 1,6-bisphosphatase deficiency) is given in the review of Van den Berghe. A review on the mechanism of action of nonglucose insulin secretagogues by Liang and Matschinsky not only discusses the second messenger cascade stimulated by these substances (hormones, neurotransmitters, hypoglycaemic drugs) but also describes the present knowledge regarding the role of glucose metabolism in insulin release.

Other reviews in basic sciences discuss diverse subjects: The complexity of nitric oxide, a flavohaeme enzyme, and its significance by Masters; The nutritional role of resistant starch (starch that escapes digestion in the small intestine) by Anison and Topping; Peroxisomal lipid metabolism by Reddy and Mannaerts (discusses the role of mammalian peroxisomes in lipid metabolism, the phenomenon of peroxisome proliferation, the mechanism of peroxisomal enzyme induction and the disorders of peroxisomal lipid metabolism); The role of iron-binding proteins in the survival of pathogenic bacteria by Mietzner and Morse (bacterial strategies for sequestering host iron and establishing itself); oxidative phosphorylation diseases and mitochondrial DNA mutations: Diagnosis and treatment by D. C. Wallace (nutritional and pharmaceutical therapies which produce moderate degrees of symptomatic relief in these disorders and future possibilities such as gene therapy); and Regulation of adipocyte development by Cornelius, Mac Dougald and Lane.

The 14th volume of *Annual Review of Nutrition* will be of particular interest to biochemists, cellular and molecular biologists and clinical scientists who may wish to work in areas where research in basic sciences can find application to solving problems of health in general and nutrition in particular.

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