MEETING NOTE

Problems connected with the preparation and use of labelled proteins in tracer studies

PISA, January 17-19, 1966

Meeting organized by EURATOM & the Center of Nuclear Medicine (University of Pisa)

During the first session concerning « Fundamental aspects of proteins labelling, » W.L. HUGHES (Boston) defined the chemical requirements of a satisfactory protein label and T. FREEMAN (London) exposed the techniques used to assess the homogeneity of iodine labelled plasma proteins.

S.B. ANDERSEN's (Copenhagen) contribution on the metabolism of iodinated-gamma globulin in man during the session on « Labelled plasma proteins for metabolic studies » introduced by A.S. MCFARLANE (London) included very interesting experimental data and theoretical consideration. ROTHSCHILD (New York) presented a paper on the use of labelled proteins to study the regulatory processes of plasma proteins metabolism.

The second day was devoted to a symposium on « Labelled proteic hormones for metabolic studies » introduced by E.F. PFEIFFER (Frankfurt/Main). R. YALOW made a brilliant presentation on the labelling of protein hormones, followed by a report of U. ROSA (Saluggia) on correlation of chemical changes due to iodination with insulin biological activity. Radioimmunoassays of ACTH glucagon and insulin were than discussed. The afternoon session was devoted to short papers on the use of labelled proteins for metabolic studies and enabled J. COURSAGET (Saclay) to present a historical survey on the subject.

During the third day, two round tables were organised :

a) Applications of tracer theory to protein turnover studies. Chairman : L. DONATO (Pisa). Participants : C.M.E. MATTHEWS (London), B. NOSSLIN (Malmö), G. SEGRE (Camerino) and F. VITEK (Praha). The validity and limitations of multiexponential analysis in relation to the physical model assumed were discussed in detail, giving a very interesting insight into the classical field of tracer kinetics for the specialist and the non specialist.

b) Prospects in radioimmunoassay of human growth hormone and parathormone. Chairman : G. MILHAUD (Paris). Participants : H. BRAUMAN (Bruxelles), COTES (London), J.P. FELBER (Lausanne), P. FRANCHIMONT (Liège), A.E. FREEDLENDER (Boston), A.S. MCFARLANE (London), F.C. GREENWOOD (London), A. LUYCKX (Liège), R. MICHEL (Paris), J.T. POTTS (Bethesda),

H.J. QUABBE (Berlin), V. STEWART (Frankfurt/Main), R. YALLOW (New York). Most of the difficulties concerning the growth hormone assay are now overcome and this assay will soon be included in the routine procedures of endocrinology laboratories. The situation is quite different in respect to parathormone, as no pure human material has ever been prepared. The collection of parathyroïd adenoma was proposed on a European basis, as starting material for the preparation of pure human parathormone. The labelling of beef parathormone, the preparation of antisera and the procedures of immunoassay are very similar to the one used for growth hormone. The round table will certainly help to establish parathormone assays in Europe and help as well to overcome a number of technical difficulties.

The last session (Chairman : C.A. ROSSI, Pisa) included short papers on labelled proteic hormones for metabolic studies : human chorionic gonodotrophin, follical stimulating hormone, luteinizing hormone and insulin.

As a result of the homogeneity of its programme, the Conference has made it possible to enumerate most of the technical and theoretical problems involved in the use of labelled proteins as tracers. The possibilities and limitations of the method have thus been brought out during the discussions.

The Conference proceedings will be published by Euratom.

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