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## HENDRIK JOHANNES THOMASSON

ON 31st October 1970, Hendrik Johannes Thomasson retired from a long and successful research career in Unilever in The Netherlands. During a period of over 28 years he has dedicated himself to the study of nutrition, in particular to the physiological role of fats in the human diet. With the results of these investigations he has acquired an international reputation, especially for his work on the function of essential fatty acids, which reached its climax in his findings on the significant contribution which natural *cis-cis*-polyenoic acids, as a dietary factor, make towards the prevention of atherosclerosis.

Thomasson studied medicine at the State University of Utrecht, The Netherlands, and carried out post-graduate work, with Professor B. C. P. Jansen and Professor Dr H. G. K. Westenbrink in Amsterdam, on the metabolism of vitamins D and B<sub>1</sub>. He joined Unilever in 1941 and during the ensuing years, and in spite of the unfavourable war-time conditions, he, together with a small group of scientists, succeeded in laying the basis for the biological work in Unilever which, after the war, was to assume such a great importance. He had a natural gift for experimental design and was able to translate the complexity of problems, which is so characteristic in life studies, into the most essential questions. His numerous publications clearly reflect his individual style and it is largely to this that they owe their lucidity.

Parallel to similar work carried out by Mead, Thomasson compared the EFA activity of a large number of natural or synthetic polyenoic fatty acids, in order to investigate the relationship between their structure and EFA activity. These studies led to the development of an accelerated bio-assay method. The most essential characteristic of this test is: restricted water supply to the test animals (rats), so that the test is, in fact, based on the degree of recovery of the skin function, which in EFA deficiency results in an excessive water evaporation. In this way it was found—more decisively than in the test developed by Deuel—that the EFA action was more specifically coupled to the  $\omega$ -6,9 structure of the natural fatty acids with an even number of carbon atoms. From the values for EFA activities of a number of polyenoic acids Thomasson was able to suggest the bioconversion pathway from linoleic acid to arachidonic acid, which proceeds via  $\gamma$ -linolenic acid and di-homo- $\gamma$ -linolenic acid. This was later confirmed by Nugteren and by Stoffel in *in vitro* experiments with liver mitochondria preparations.

A new dimension was added to Thomasson's EFA studies when it gradually appeared, from the work of Kinsell, and others, that dietary polyunsaturated fats can have a significant lowering action on the blood-cholesterol level in man, while, on the other hand, a strong correlation between high cholesterol level and atherosclerosis became apparent. The relevant literature of the mid-fifties reflected a great deal of controversy on the issue of whether or not dietary lipids could influence the process of atherogenesis. Much of this conflict of opinions arose from the confusion of correlation with causality. Thomasson (and almost simultaneously Malmros) was the

first to demonstrate in experiments with animals (rabbits) a direct causal relationship between types of dietary fats and atherogenesis, in which the protective action of oils containing a substantial amount of linoleic acid became apparent. This finding has since been confirmed on many other animal species and has found substantial support from extensive population studies in Europe and North America. These investigations, which were carried out during the sixties, have contributed to the concept that a correct choice of dietary fats is an important factor in reducing the risk of developing cardiovascular disease. These insights are reflected by statements issued by the American Heart Association, the Swedish Society of Nutrition, etc.

Bergström and Van Dorp's discovery, in 1963, of the biosynthesis of prostaglandins from essential fatty acids caused a revival of the study of the physiological significance of EFA in that it revealed certain effects relevant to the physiological function of EFA in atherosclerosis. In particular, Thomasson's research team found that some of the prostaglandins decrease the tendency of blood platelets to adhere and aggregate in *in vitro* as well as in *in vivo* experiments. Simultaneously, *in vivo* experiments were carried out which show a protective action of dietary linoleic acid against platelet aggregation. The results of this work stimulated Thomasson to postulate a hypothesis on the pathogenesis of atherosclerosis and thrombosis.

Even if the foregoing does emphasize the main trends of the work with which Thomasson engaged himself, it is by no means exhaustive. Thomasson and his team have also included many other aspects of dietary lipids in their investigations. An important example is the toxicological testing of butter flavour components and emulsifiers. Moreover, his studies of the nutritional value of natural oils and fats have resulted in a more differentiated pattern of the effect of various classes of lipids. A specific example was his finding, in 1955, that rapeseed oil contains a growth-retarding component which turned out to be the erucic acid contained in the oils. Continued study has recently produced important data on the physiological effects of erucic acid: *inter alia*, a depression of ATP production in muscle cell mitochondria, by high levels of dietary erucic acid.

Thomasson has made valuable contributions to many international conferences and symposia in the field of lipids and nutrition and we have no doubt that the results of his work have had, and still have, great influence on the work of others. His expertise was also recognized in his being awarded a Laureate of the Royal Flemish Academy of Medicine in Belgium (in 1958 together with his co-worker Gottenbos) and the Dr Saal van Zwanenberg Prize (in 1967 together with Van Dorp). Thomasson has been a member of the Editorial Board of the European journal *Nutrition and Metabolism* and has served on the Editorial Advisory Board of this series. On his retirement Thomasson's merits were rewarded by his being appointed, through the Ministry of Health, an Officer in the Order of Oranje Nassau. Undoubtedly, in his hospitable home in Ede, he will continue for many years to receive the many friends he has made in the scientific world.