

# endocrinologia experimentalis

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### PAST AND PRESENT PROBLEMS OF ENDEMIC GOITRE

Papers dedicated to 70th birthday of Doc. Julián Podoba, M. D., Ph. D, former Director of the Institute of Experimental Endocrinology, Bratislava and Editor of this journal

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## Introduction

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It is certainly an outstanding honour and pleasure to congratulate Dr. Julián Podoba on the occasion of his 70th birthday. A group of friends and thyroidologists gather in this issue in order to celebrate Dr. Podoba, who has contributed a lot to science as founder of the reknown Institute of Experimental Endocrinology, as investigator in many fields and as a promotor of public health.

The knowledge of thyroidologists has been expanded by the work of Dr. Podoba particularly in two areas, the fields of naturally occurring goitrogens and of endemic goiter. The Symposium on Naturally Occurring Goitrogens and Thyroid Function organized in 1962 by the Slovak Academy of Sciences, Bratislava, and published in 1964 by Podoba and Langer concentrated the contributions from all the international community of scientists and turned out to be a landmark in the relevant literature. Dr. Podoba then introduced a series of original papers from his Institute in stressing the aspects of enzootic goiter and of experimental endocrinology using goitrogenic foodstuff.

One of the outstanding participants of this symposium in 1962 and, since that time, a friend of Dr. Podoba and of several of his associates, Monte A. Greer from Portland, Oregon, contributed the first flower to this scientific birthday bouquet, elucidating the early period of the research on iodine deficiency, goiter and naturally occurring goitrogens. It appears to be appropriate to mention the next flower contributed by Lester van Middlesworth from Memphis, Tennessee, who visited several times the Institute in Bratislava. In his paper a review is given on previous findings by himself and his associates favouring the concept that thiocyanate, both a product of normal metabolism in the human organism and from exogenous sources such as medication or cigarettes, plays a quasi physiological role in the regulation of thyroid function. Further, some goitrogens may require thiocyanate for their full effect. The paper finally summarizes the recent finding of an abnormal thyroglobulin produced experimentally when low iodine diet and chronic thiocyanate administration are combined.

Persuing this issue, Dr. Podoba's friends from a group of Hugo Studer in Bern, Hans Gerber et al. report their recent work on thyroglobulin diffusion in the colloid space. The autoradiographic technique used in this field was enriched by the study of a new marker ( $^3\text{H}$ -dihydrotestosterone). Thyroglobulin diffusion is another heterogenously distributed property of thyroid tissue and slow thyroglobulin diffusion in old mice may turn out as a finding of relevance to aging. Experimental lowering of thyroglobulin diffusion velocity was shown to slow down thyroid hormone formation.

Dr. Podoba's second centre of interest in thyroidology appart from naturally occurring goitrogens is the field of endemic goiter. Obviously, it is very appropriate to include into this birthday present some contributions addressing this area.

Bror-Axel Lamberg from Helsinki, a long-term scientific colleague and friend of Dr. Podoba, joins in with a discussion on changes of endemic goitre in Finland during 30 years of iodine prophylaxis which is actually analogous to that work which Dr. Podoba did in Slovakia, including the participation of genetic factors. Then Aldo Pinchera and Gian Franco Fenzi from Pisa bring up the recent evidence for immunological factors

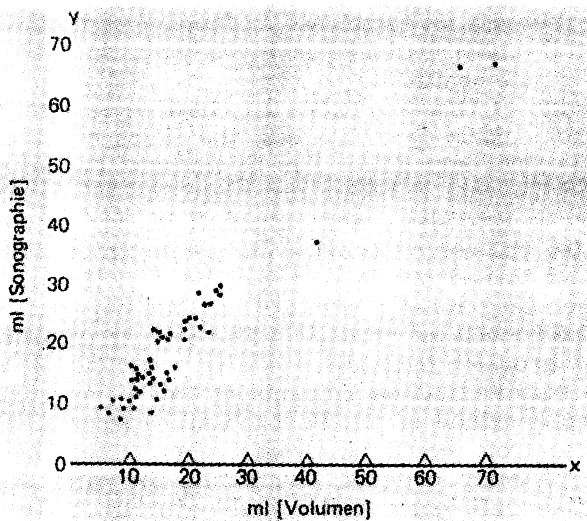


Fig. 1. Accuracy of determination of thyroid size by ultrasound. Thyroid lobes were measured in situ immediately before autopsy ( $n = 25$ ). Multiplication of length  $\times$  width  $\times$  depth  $\times \frac{\pi}{6}$  resulted in sonographical volume, ordinate. After autopsy, the true volume of the thyroid lobes was determined by submersion in water, abscissa. Using an optimized factor  $F = 0.479$  instead of  $\frac{\pi}{6}$  in the above expression, average error of the method is 16% [from Brunn et al.: Dtsch. med. Wochenschr. 106, 1338, 1981].

stimulating thyroidal growth as they certainly play a role in sporadic goiter and may likewise contribute to endemic goiter. This work has opened up a new field of experimental and clinical research on the non-toxic goiter problem. Demetrios A. Koutras and his associates from Athens have started a well designed, placebo controlled study on the treatment of patients with non-toxic goiter in the Greek endemic area, which may help

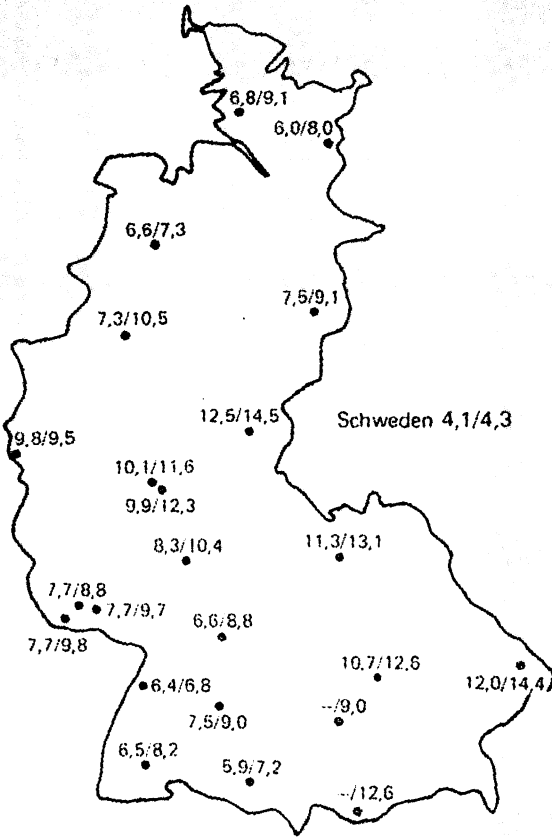


Fig. 2. Thyroid volume in school children compared in Stockholm and in the Federal Republic of Germany.

Thyroid volume (male/female value) was determined by ultrasound in 13 year old school children (n = 2244) from 23 places in the Federal Republic of Germany and in 224 school children from Stockholm, where the iodine supply is adequate. The results show that thyroid size gradually increases from North to South. Mean thyroid volume in Swedish children was 4.2 ml, in German children 9.3 ml. More than one third of German children have a larger thyroid volume than the largest volume measured in Swedish children. The results support the need for iodine-salt prophylaxis for the entire German Federal Republic [from Gutekunst et al.: Dtsch. med. Wochenschr. 110, 50, 1985].

to fill a gap in our knowledge of the optimal treatment and of benefit side effects ratio. The paper raises again the question of the interrelation of iodine and autoimmunity.

Karel Bauch and associates report from the iodine deficient German Democratic Republic. The area of Karl-Marx-Stadt was shown to house severe goiter endemicy with 60 % of the pregnant women having goiter and 53 % of stillborns born with an enlarged thyroid. Administration of 150  $\mu\text{g}$  iodine per day to pregnant women reduced the rate of neonatal goiter to 0.8 %. Wilfried Meng et al. join in giving an epidemiological and clinical review with emphasis on the socio-economical sequelae of endemic goiter and announcing the iodination of all packed salt in the GDR.

This may be the place to remember the known successes of our colleagues from Czechoslovakia with their goiter prevention program as recently reviewed by the Subcommittee on Endemic Goitre and Iodine Deficiency of the European Thyroid Association (The Lancet, 1985, I. p. 1289). One part of this program was also a long-term follow up of the incidence of thyroid cancer and survival of treated patients with regard to the conditions of previous long-term action of goitrogenic factors (environmental, genetic, etc.) in this country, the results of which are partly presented by Jan Němec and his associates from Praha.

Dr. Podoba has early supported the concept of an estimation of the relative size of the thyroid (RT-value) as it may be seen from his monograph on "Endemická struma na Slovensku" (Bratislava 1962). This idea facilitated a more quantitative insight into the problems of endemic goiter. These are the days of broader application of ultrasonography for determination of goiter size. Therefore, the undersigned author takes the liberty to join the group of friends of Dr. Podoba by adding two leaves to the congratulation bouquet (Fig. 1, 2).

Our congratulation comes together with our best wishes for good health, for happy years to come and for continued interest in the achievements of science.

Happy birthday, Dr. Podoba!

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September 1985