

Professor Stárka and His School: a Brief History of a Pioneer Scientist, Physician and Manager



At the end of the last year celebrated his 80th birthday one of outstanding scientists, physicians and managers, the emeritus director of Prague Institute of Endocrinology, Professor Luboslav Stárka, MD, DSc.

He graduated with excellence in 1956 on Faculty of Mathematics and Physics, Charles University, the Chair of Organic Chemistry. His Thesis dealt with anthraquinone derivatives isolated from tutsan. After one year intermezzo in various Prague enterprises (radio-communications, food industry) he finally anchored in the Research Institute of Endocrinology, led by its first director, Doc. MUDr. Karel Šilink, DSc. In the institute he spent more than 50 years, reaching finally the director post (1983-1987, 1990-2000).

Docent Šilink, himself a pioneer of new approaches in endocrinology such as radiotherapy of thyroid diseases with radioiodine or modeling of endocrine regulations on analogue computers as early as in the late fifties, asked him to build a steroid hormone laboratory. He left him a maximum possible freedom, which Dr. Stárka accepted as a challenge. He targeted his effort to clinical biochemistry and physiology of steroid hormones, but soon his scientific activities became broader covering the fields of the whole endocrinology. His first paper on steroids appeared as early as in 1957 in *Naturwissenschaften* and concerned the polarographic estimation of formaldehydogenic and acetaldehydogenic steroids. In 1961 he defended his PhD (CSc.) Thesis, after external study at the Institute of Organic

Chemistry and Biochemistry, Czechoslovak Academy of Science in Prague. His thesis dealt with isolation, identification and synthesis of 7-hydroxydehydroepiandrosterone.

During his short-term stays in the late GDR (Institute of Endocrinology, Berlin Charité or Institute of Microbiology, DAW in Jena) he became acquainted with a number of researchers working in steroid field, which was at that time in the center of interest of endocrinologists. At the conference in Jena his work attracted the attention of Prof. H. Breuer, at that time the vicepresident of Deutsche Forschungsgemeinschaft, the dean of the University in Bonn and a world-respected personality in the research of steroid hormones. Prof. Breuer invited Dr. Stárka to a half-year scientific stay to Bonn, which was then twice repeated (1965, 1966, 1969). The stays in the laboratory of Prof. H. Breuer were one of the most fruitful period of L. Stárka's early scientific career. During 1965-1969 he published at least 19 original papers in highly impacted journals co-authored by H. Breuer and his collaborators of the Bonn-Venusberg laboratory (R. Knuppen, K. Dahm, E. Dölefeld), dealing with metabolic transformations of steroids and their mechanism. Out of them let us mention at least those concerning the mechanism of equine estrogens or metabolism of epitestosterone, still cited in the literature.

From those times dates his contacts and friendship with leading steroid endocrinologists such as

H. Adlercreutz, E. E. Baulieu, J. A. Gustafsson, R. Knuppen, L. Martini, E. Nieschlag, G. W. Oertel, C. Shackleton, B. I. Tamaoki, J. H. Thijssen, A. Vermeulen, R. Vihko, J. Pasqualini and many others, who constituted a new journal *European Journal of Steroid Biochemistry* (1965). The journal, now under the name *Journal of Steroid Biochemistry and Molecular Biology*, represents the leading periodical in the steroid field (impact factor about 2.8) and Dr. Stárka has been a member of its Editorial Board since its beginning.

Without interruption of his work in the Institute of Endocrinology, Dr. Stárka started to study medicine at the Faculty of Medicine, Charles University, where he graduated in 1972.

His experience as a biochemist and physician and also his collaboration with outstanding Czech and Slovak physicians and biochemists (e.g. professors J. Raboch, sexuologist, J. E. Jirásek, embryologist, K. Motlík, pathologist, Dr. J. Obenberger, experimental ophthalmologist, Dr. A. Kasal, steroid chemist and many others) enabled him to reveal gaps in general knowledge and investigate interdisciplinary problems, some of which, as outlined below, later pointed out new ways of research.

Together with J. Šulcová-Kůtová and J. E. Jirásek he investigated the onset of individual steps of steroid biosynthesis during embryogenesis, the theme crowned by a series of pioneer papers. With J. Raboch and others he published a number of original studies on the role of sex steroids under various clinical states (men with varicocele, hypospadias, males and females with various sexual deviations, women with polycystic ovary syndrome). The work on Klinefelter's syndrome was awarded by the prize of the minister of health in 1979.

In seventies and eighties, together with Dr. J. Obenberger he turned the attention to so far not much recognized topic – the role of steroid hormones in the internal milieu of the eye. Among other problems they investigated the role of aldosterone and glucocorticoids in (patho)physiology of ocular hypertension. This research has brought as much as 38 original papers and was a base of Stárka's DrSc Thesis entitled „*The role of mineralocorticoids in nutrition of avascular eye tissues*“ (1979).

With the author of this article they were the first who developed and introduced radioimmunoassay of steroids in our country. Original RIA methods for steroid anabolics had been for years used as screening tests in doping control. From that times it also dates a series of Stárka's papers concerning the antiandrogenic effects of

newly synthesized steroids, prepared in the Institute of Organic Chemistry and Biochemistry CAS (with Dr. A. Kasal and others). Experience with immunoassays was later fructified by the development of original methods for determination of natural phytoestrogens in collaboration with Prof. H. Adlercreutz (Helsinki) and Stárka's collaborators and pupils – now professors O. Lapčík and R. Hampl.

Since early nineties, besides of his director's duties, Stárka's scientific activities were focused on the physiological role of less common steroids – metabolites or precursors in metabolic pathways. Some of his early findings as the demonstration of antiandrogenic properties of epitestosterone or the works on 7-hydroxylated metabolites dehydroepiandrosterone and other androgens became a starting point of a new promising research. This concerns especially the latter: The recent work by R. Morfin and coworkers (Paris) and by us revealed immunoprotective and neuroprotective of 7-hydroxylated DHEA metabolites.

The scientific activities of Prof. Stárka outlined here are far not complete: he encouraged young physicians and scientists in PhD study for new ideas and perspectives in biomedical research. Out of his recent research activities let us mention the effect of smoking on endocrine status, the participation of steroid metabolome in pregnancy and delivery, the so far unknown effects of dihydrotestosterone and, last but not least, the problematics of neuroactive steroids and their role in such severe diseases as Alzheimer's dementia or schizophrenia.

In 1991 he habilitated at the Third Faculty of Medicine of the Charles University in Prague in human physiology and pathophysiology and one year later was appointed a professor there. His style of scientific work, characterized by innovative approaches and admirable holistic knowledge of endocrinology and biochemistry, inspired his pupils and successors. Among them there are five professors, four associated professors („docents“) and tens of postgradual students. During his directorship the Institute of Endocrinology became a respected scientific and medical institution, sought out by patients as well as scientists not only from the Czech Republic but also from abroad.

His unceasing activity is inspiring for his pupils, collaborators, successors and friends, who wish him all the best for the next years.

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