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OUTSTANDING REPRESENTATIVE OF ESTONIAN EXPERIMENTAL PHARMACOLOGY: GEORG KINGISEPP

In Tartu medicine began to flourish especially after the re-opening of the University in 1802. New branches of science sprang up, among them experimental pharmacology in 1847 the founder of which was Rudolf Buchheim. In Estonian Republic Georg Kingisepp became the first head of the department of pharmacology, the man who can be considered the founder of Estonian pharmacology.

Professor Georg Kingisepp belongs to the generation of scientists who saw two world wars. He worked in very complicated political and economic conditions which also reflect in his biography and lifework.

G.Kingisepp was born in a peasant family in 1898 in the commune of Kabala, County of Viljandi. After getting primary education in the village school and Alliku Elementary School he entered Rakvere Teachers Training College which he graduated in spring 1917 as a primary school teacher. Until 1918 Georg Kingisepp worked in the Türi Paper Mill. At the breakout of the war of Independence he joined the army as a volunteer and in December 1919 entered the Military School of the Republic of Estonia where he got the rank of ensifer. After demobilization G.Kingisepp continued his education in the Põltsamaa Gymnasium of Sciences, which he finished on June 11, 1921. In the autumn of the same year he started his studies in the Faculty of Medicine University of Tartu and continued, also in the same year in Germany, Heidelberg University [1–3, 11, 12]. During 1923–24 G.Kingisepp worked with professor Edelbacher in the Heidelberg Institute of Physiology in the field of physiological chemistry. Because of economic reasons he had to break off his studies and start working as a teacher in Estonia in the Türi Horticultural Gymnasium and a year later as a teacher of natural history in the Väike-Maarja Gymnasium of Sciences.

In 1926 he managed to continue his studies in Heidelberg University; the Faculty of Medicine he graduated from in autumn 1927. There he also acquired the grade of doctor of medicine in the autumn of 1927. After graduating from the university he worked from Oct. 1927 to March 1928 in the Heidelberg Clinic of Internal Diseases with Prof. Krehl as a voluntary assistant, in summer the same year he worked in Balbheim and

Germersheim as an assistant doctor, from autumn 1928 to spring 1929 as a doctor in the Heidelberg Clinic of skin diseases and for a short time in Heidelberg Children's Clinic with Prof. Moro, in the summer of the same year as an assistant doctor in Germersheim and Kandern [1, 3].

In the summer of 1929 G.Kingisepp returned to his homeland and started to practice in the Faculty of Medicine of Tartu University. The year 1930 can be considered a turning-point in his life. Already at the beginning of the year he started working at the Institute of Pharmacology which remained his workplace till the end of his life. In 1932 G.Kingisepp passed the exams for the candidate of the doctor's degree in the Faculty of Medicine in University of Tartu [1, 4].

For the years 1934–35 he succeeded in getting a scientific scholarship from the university to study at the Institute of Pharmacology with Prof. Clark where he developed his knowledge of pharmacology and therapy [2, 7].

In the second half of 1936 G.Kingisepp obtained the degree of doctor medicine in pharmacology in University of Tartu. From the beginning of 1937 he worked again abroad as a grant-aided scholar in the Münster Institute of Pharmacology under the supervision of Prof. Lendle. In the same year G.Kingisepp got the rights *pro venia legendi* in University of Tartu and started to read the course of pharmacology [2, 9].

This course of lectures caused the necessity to work out the adequate pharmacological terminology in Estonian and also the appropriate study plans. These fields of work form one of the most important part of his lifework also on which his later textbooks were based.



Georg Kingisepp (1898–1974)

In 1938 G.Kingisepp became a professor. From May 20, the same year Prof. G.Kingisepp worked as the head of the Institute of Pharmacology of University of Tartu which later became the Department of Pharmacology [2, 3].

In the Soviet occupation period Prof. G.Kingisepp was for several times elected the head of the Department of Pharmacology: on Dec. 26, 1940 he was elected a deputy head but already in 1945 he became a full-right head. The archival materials give information about reelections in 1955 and 1962. In 1972 Prof. G.Kingisepp became a consultant professor, doctor of medicine, Prof. Lembit Allikmets was elected the head of the Department of Pharmacology [2, 3].

Prof. G.Kingisepp has published over 50 scientific works which deal with different problems of pharmacology. In the last 15 years of his work he directed the pharmacological-toxicological studies of the new preparations produced by the Tallinn Chemistry and Pharmacy Plant (Vipraxin, Libexin, Najaxin, Proposal and others) [2, 14]. Several authors who have studied G.Kingisepp's scientific works distinguish between the following trends: biochemical, experimental physiological, experimental pharmacological, textbooks and reviews [2,13]

Prof. G.Kingisepp has a few biochemical works. During 1930-34 he has published together with Prof. Georg Barkan four research papers about the analysis of tryptic digestion and hydrolysis of organic substances. The works contain methods of iodine identification. In a later research from 1955 (with A.Raatma) he has shown that the toxication by shale oil is preceded by some changes in blood proteins that can be the basis of early diagnostics.

In the two experimental physiological works made together with A.J.Clark (1935) G.Kingisepp studied the effect of asphyxia on the isolated heart of a frog [4, 3]. Prof. G.Kingisepp's studies in the field of experimental pharmacology started in 1933 and lasted till the end of his life. The articles «Zur Frage der experimentellen Anämien durch Parasiten Giffl» (1933) and his dissertation for a doctor's degree «Zur Frage der Leberwirkung bei experimentellen Tieranämien und über den Character solcher Anämien» (1936) deal with the formation of experimental anemia in animals. Anemia was induced by administering several drugs and the author tried to explain their character by liver treatment. He was very close to explaining the role of vitamin B₁₂ being the first man in the world to show that in the treatment of a destructive anemia a biologically active substance containing cobalt plays an important part. Several studies made together with Clark and Lendle dealing with the pharmacodynamics of Digitalis preparations showed that the accumulative effect of many glycosides – strophanthin, digitoxin, scillaren and the glycosides of Lilly of the valley and Adonis differs and the glycosides are bound with the myocard reversibly [1, 4].

Prof. G.Kingisepp and A.Raatma were one of the first to study the toxicity of chamber – and generator oils of oil shale in Estonia. In 1955 Prof.

G.Kingisepp together with V.Parvet worked at the problems of the absorption and elimination of barbamyli. In the history of science they were the first to show the formation of acute tolerance of barbamyli in experimental animals.

Prof. G.Kingisepp's works during 1956–64 together with H.Kurvits deal with the pharmacology of central-effect analgetics – promedol, anadol and acethylaminoethanol [2, 10]. He has written 2 original pharmacology textbooks (1949, 1963), a collection of prescriptions (1957), instructions for practical work in pharmacology (1957), chapters on drug in medical handbooks (1949, 1961), booklets «Antibiotics» (1960) and «About the Pharmacological Effect of Alcohol» (1960) and a host of reviews.

Prof. G.Kingisepp was also interested in the history of pharmacology. He has written articles on the history of the Department of Pharmacology of University of Tartu (1951), about the foundation of the first experimental laboratory of pharmacology in the world that was founded in University of Tartu (1964, 1970), «A Hundred Years of Cocaine». After a period of time his work at the Estonian textbooks seems to be the most important part in his work and the whole Estonian postwar generation of medics has used them. The textbooks are good for their time and smoothly written [2, 13].

With G.Kingisepp's active participation several all Soviet Union and inter-Estonian republican scientific conferences have taken place in Tartu: a meeting «On the Problems of Sleep and Sleep Therapy» (1955), conference «On the structure and Effects of Medicines» (1956) and others. He has taken part in many other congresses and conferences of pharmacology in the cities of the Soviet Union (Moscow, Leningrad, Volgograd, Minsk, Riga, Kaunas, Yerevan and others).

G.Kingisepp was a talented and able scientist with a good command of the English, German, Russian and Estonian languages. He had an original standpoint on every topic of research. We must bear in mind that he was already nearly forty when he could plan his research independently. After a few years of work the Second World War broke out. In the hard conditions of the German occupation period many scientists lost the wish to do scientific work but not G.Kingisepp [2, 8]. The professor had the perseverance to fight for the rights to teach in Estonian during German occupation and it was during those years that he finished his «Pharmacotherapy» I and II part (1942) – a textbook meant for the university students and practicing doctors. This manuscript appeared as a valuable textbook in 1948. In scientific research Prof. G.Kingisepp quickly mastered new methods. Already in 1930 and 1940 he used statistic mathematical methods to examine the results of experiments [2, 16]. 5 dissertations for candidate's degree and over 100 scientific works have been written under his supervision. He has published his works in local and foreign magazines and he has been cited in several textbooks and handbooks.

He did valuable work in popularizing science being an active member of the society «Science» and lecturer in adult education courses of healthcare for many years. He lectured on many subjects and to very different audiences, wrote lots of popular-scientific articles and booklets, chapters for «*The Handbook of Healthcare*», articles for «*The Estonian Soviet Encyclopedia*».

Prof. G.Kingisepp took an active part in social work. He was a founder member of the Society of Physiology of Estonia, he was elected a member of the redaction committee of the All-Soviet Union magazine «*Pharmacology and Toxicology*» and the chairman of the Society of Pharmacology of Estonia (2, 4, 5, 6). On his 75-th birthday the consultant Prof. of the Department of pharmacology, doctor of medicine G.Kingisepp was awarded a certificate of honour of the Ministry of Higher Education of Estonia for long productive scientific-pedagogical and social work. To mark his great serves in developing pharmacology he was awarded a medal named after N.Kravkov, the founder of Soviet pharmacology, in 1970 in the plenum of the All-Soviet Union Society of Pharmacologists. This was considered the highest award in the Soviet Union in the field of pharmacology [2, 15].

G.Kingisepp's hobbies were hunting, car-driving and playing chess [2, 14]. Three of his five children have become physicians: his son Henn-Peet is a physiologist, his daughter Reet is a hygienist, his daughter Evi is a neurologist.

Prof. G.Kingisepp died in August 19, 1974 and is buried in Raadi cemetery, Tartu.

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