Dr. Hermányi Sztankay, Aba
(1868-1936)
A Hungarian pharmacist who gained European reputation with his researc

Author by Attila György TATÁR

BIOGRAPHY

In 1868 he was born into a pharmacist family in Verespatak, Transylvania (today: Roşia Montană in Romania). The family moved to Selmecbánya in Hont County (today: Banská Štiavnica in Slovakia).

In 1882 he became pharmacist apprentice at his father's side, but he pursued his secondary school studies as a private student.

In 1884 he took the apprentice examination in pharmacy.

In 1885 he completed his secondary school studies and took the secondary school leaving examination.

In 1885 he enrolled in the Faculty of Metallurgical Engineering of College of Mining and Forestry in Selmecbánya and completed four semesters. The College was established by Maria Theresa (1740-1780), the Austro-Hungarian queen. Sztankay gained thorough and all-round knowledge in chemistry and natural sciences at the college. The curriculum consisted of teaching general chemistry, organic chemistry, qualitative and quantitative chemistry, nature studies, mineralogy and botany. He stopped his studies because he decided to pursue his father's profession. At that time obtaining a pharmacist degree in Hungary was subject to the completion of apprentice examination in pharmacy, attendance of four semesters at a university and completion of the necessary final examinations.

In 1887 he enrolled in the Faculty of Mathematics and Natural Sciences of Franz Joseph Hungarian Royal University in Kolozsvár (today: Cluj-Napoca in Romania). He completed two semesters.

In 1888 he was a pharmacy student at the Faculty of Medicine of University of Budapest, Hungary where he completed the final two semesters.

In 1889 he qualified as a pharmacist.

In 1890 he spent his compulsory military service at the Military Hospital No. 2 in Vienna, Austria. In his spare time he usually attended the lectures held at the Faculty of Chemistry and Natural Sciences of University of Vienna.

Between 1891 and 1893 he worked as an assistant lecturer at the Department of Chemistry of Mining Academy in Selmecbánya.

HIS PROFESSIONAL WORKS

He was only 22 years old when he compiled a handbook about urine examinations in Hungarian language on the basis of articles published in German language. This publication is the first Hungarian work in the field.

The book consisted of 110 pages and 6 chapters. It was used for a long time in Hungary. The first copy was published in Selmecbánya in 1890.

In 1893 in his doctoral thesis he developed an easily feasible procedure to extract nitrogen from air. During his experiments he observed that in regulated conditions magnesium mixed with graphite tied up nitrogen from the air and formed magnesium nitride. Nitrogen could be easily removed from this compound. Later – realizing the importance of nitrogen in the synthetic industry – he published the procedure in the 53rd and 54th Issues of Viennese Pharmaceutische Post in 1896. The quickly developing German chemical industry often used the method.

The 'Appendix' supplementing the Second Hungarian Medicine Book (*Hungarian Pharmacopoeia*) published in 1888 came into force in 1896. This supplementary material contained 26 pharmaceutical ingredients, a few pharmaceutical products and medical dressings. The new medicines were reviewed by Sztankay in the 24 subsequent issues of the professional 'Pharmaceutical Journal'. Later he published this series of articles for educational purposes in a book.

HIS EXPERIMENTS TO DEVELOP NEW MEDICINES
DISCOVERY OF HONTHIN

The patenting and industrial manufacturing of Tannoum albuminatum keratinatum, more widely known as the medicine Honthin, his most widespread discovery, greatly added to the recognition of Sztankay's name all over Europe.

Even at the end of the 19th century to cure enteric infections was one of the unresolved problems. Not sulfonamides or antibiotics were known at the time. Tannic acid was used to cure enteric infections which caused the entire gastrointestinal tract to contract, therefore it significantly reduced the loss of fluids, one of the severe symptoms of the disease. To achieve this, tannic acid had to be made resistant to gastric acid. It had to enter the gastrointestinal tract without dissolving in order to be effective in this specific region of the body.

EULAXANS, A PRODUCT DEVELOPED FROM PHENOLPHTHALEIN

Phenolphthalein is a laxative discovered by a Hungarian professor, Dr Vámossy. During his research, Sztankay determined that there was no quantitative correlation between the dose used and the results achieved. Through further experiments he observed that the newly synthesized Phenolphthalein was amorphous and dissolved well in water. After standing, it became crystalline and because its solubility decreased significantly, the effect of the product decreased as well. To stabilize the effect of Phenolphthalein, he generated a reaction with sodium hydroxide that converted it into a chemical compound becoming a crystalline Phenolphthalein when reacting with the acid in the stomach causing an instant effect. He named this Phenolphthalein derivative Eulaxans. He determined the chemical structure of the compound: a combination of one molecule of Phenolphthalein and two of sodium hydroxide composed the addition compound. Picture 3 shows the bottles of Eulaxans in the Sztankay pharmacy. He developed another compound from Phenolphthalein. He named it Perrectal referring to the fact that it could be used through the rectum. The product was successfully used in veterinary medicine as well. Because of its instability the product was not used commonly.

PRODUCING THEOBROMINE DERIVATIVES:
THEOBROMINE SODIUM SALICYLATE AND
ANISOTHEOBROMINE

Diuretin was registered in the supplement edition of the 2nd Hungarian Medicine Book as an official medicine. Diuretin was a complex drug composed of sodium salts of Theobromine and salicylic acid which was used to increase urine output. Sztankay examined the chemical structure of Diuretin for years then produced new Theobromine compounds. He determined that in Diuretin the Theobromine had a double bond chemical compound; it is a combination of one molecule of Theobromine, one molecule of sodium hydroxide and one of sodium salicylate. This observation differed from the previous observations regarding the structure of Diuretin. In 1909 Otto Frei German professor confirmed the results of Sztankay's research at the 81st Annual Conference of German doctors and natural scientists in Salzburg, Austria.

In 1893 he qualified as a Doctor of Pharmacy in chemistry major at the Faculty of Natural Sciences of Franz Joseph Hungarian Royal University in Kolozsvár.

Between 1893 and 1895 after the termination of his employment as an assistant lecturer he started working in the pharmacy of his father in Selmecbánya.

During his studies Dr Hermányi Sztankay, Aba studied the pharmacy related fields of chemistry and natural sciences with great enthusiasm and commitment.
After completing his university studies he worked as an assistant lecturer at the side of two excellent professors.

His teaching experiences greatly added to deepen his professional knowledge and inspired his further professional work. Although he worked as a pharmacist practitioner from here on, he equipped the laboratory of his pharmacy with the most up-to-date instruments suitable for chemical research and conducted pharmaceutical research until the end of his life. He always planned his experiments very carefully. He consulted his results with doctors and professionals in the field of the research and published articles about his achievements in Hungarian and German pharmaceutical journals. During his research he published more than a hundred articles, some of them were for educational purposes for his Hungarian pharmacist colleagues.

Between 1895 and 1913 he managed the pharmacy of his father-in-law in Bőt in Hont County (today: Bátovce in Slovakia).

Between 1914 and 1936 he managed his own pharmacy established in Debrecen, Hungary.

In 1931 he qualified as a private teacher at the Tisza István University in Debrecen. He gave lectures at this university until the end of his life.

The pharmaceutical factories manufacturing pharmaceutical ingredients distributed several products having the same effect. One of the most widespread products among them was Tannalbin, the product of Knoll Factory in Germany. In the case of Tannalbin, the tannic acid was coated in albumin and several other technical methods were used to increase the resistance to gastric acid. In spite of the above only part of the active ingredient, the tannic acid could enter the gastrointestinal tract to have an effect.

To increase the resistance to gastric acid, Sztankay coated his product, Honthin – which was treated by protein and contained tannic acid – with keratin. This substance ensured almost full resistance to gastric acid, therefore the active ingredient, the tannic acid remained unchanged and could have a real effect in the entire gastrointestinal tract. He conducted a series of experiments to prove that using the same dose, in case of using Honthin twice as much of the active ingredients entered the gastrointestinal tract than in case of using Tannalbin. He named his product after his homeland, Hont County.

He patented the medicine in many European countries and had it manufactured in one of the chemical factories of Opava City, situated in the Czech Republic. The advantages of the medicine were mentioned in many articles published abroad. Picture 1 shows the articles written in German and French language informing about the useful effects of the product. In 1900 the August issue of medical journal 'The Therapist' published in London commended Honthin as well. Keratin was produced from animal claw and hair. After proper cleansing it could be used to coat pills being resistant to gastric acid, but dissolving in the gastrointestinal tract.

After the international and Hungarian success of the product, the 3rd Hungarian Pharmachopoeia issued in 1909 and the 4th Hungarian Pharmachopoeia in 1935 registered Honthin as an official medicine.

Picture 2 shows the article about Honthinum registered in the 3rd Hungarian Pharmachopoeia

Diuretin had many disadvantageous effects. In the urine of people using Diuretin for a long time magnesium ammonium phosphate was found, a typical symptom of people suffering from sodium hydroxide poisoning. Therefore Sztankay tried to produce new derivatives of Theobromine. The first result was the Theobromine sodium salicylate. The biggest advantage of the compound was that it had a less alkaline effect compared to Diuretin. Later he produced another derivative of Theobromine, this was the Anisotheobromine. The compound was very similar to Diuretin, the difference was the presence of methyl peroxybenzoic acid instead of salicylic acid. This element irritated the intestinal mucosa much less. Both products were introduced in the third volume of Hagers Handbuch der Pharmaceutischen Praxis published in Berlin, Germany. Anisotheobromine was described in the fifth volume of Biochemical Handbook in German language. Picture 4 shows the description of Anisotheobromine in the fifth volume of Biochemical Handbook – referring to Sztankay – a publication re-issued in 2013 by Springer Publisher.

Besides the above-mentioned drugs he conducted experiments by using silicon compounds as medicine, especially using silicic acid and calcium to neutralise the effect of stomach acid. He also examined the hydrolysis of salicylic acid derivatives in aqueous solution.

He was unable to finish many of his works. He also tried to produce a compound similar to Neosalvarsan. He even wrote a letter to the Nobel Prize winner scientist, Paul Ehrlich (1845-1915). He pointed out one of his observations regarding Neosalvarsan to Ehrlich for which the scientist was grateful.

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SONDER-ABDRUCK
aus der
PHARMAZEUTISCHEN ZENTRALHALLE

Das Keratin als Mittel gegen Darmkatarrh.

Von Aba von Sztankay, Debrecen.

Picture 1

Tanninum albuminatum keratinatum.

Honthinum. Keratinált csersavas fehérje.

Sárgás barna színű, szagtalan és ízetlen por. Vízben és szeszben oldhatatlan.

Picture 2

Picture 3

Picture 4