

## A Glance into the Teaching of Pharmacy in the Anatolian Turks and Faculty of Pharmacy in Istanbul

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*Preface:* The History of pharmacy which is an important branch of medicine extends far back into the darkneses of antiquity because the first man in his first moment of pain must have turned to himself in search of a remedy and with a thought for experimentation. As in other fields of learning, if we consider the leading role of animal instincts we may as well say that history of pharmacy, just like history of medicine, is as old as life.

For example, we know that a dog suffering from dyspepsia eats couch grass and a constipated goat white hellebore. Noticing these facts, ancient Pliny, the renowned scholar of Natural History in the old ages, fed his children white hellebore whenever it became necessary.

In the antique ages, we find the physician and the pharmacist in the same person. In ancient Mesopotamia, China, India, Egypt, Rome, and Greece, the physician is also the pharmacist. The differentiation of these two branches first appeared at the School of Alexandria during the third century B.C. We can, thus, say that the father of pharmacy in the sense of its present day meaning is *Theophrastus*, the Alexandrian botanist. Later on, the Greek achievements in this field were passed over through Rome to the Islamic world. Leaving aside the Mesopotamian medical pamphlets, deciphered and written in modern Western languages today, and the papyri of ancient Egypt, the first book on pharmacy is *Materia Medica* written in the first century A.D. by *Pedanius Dioscorides*, a Roman military physician born in Asia Minor. This book served to train numerous physicians and pharmacists through the centuries. Later on during the second century A.D., Galen, another Roman physician from Asia Minor, became the father of pharmacy. He reigned in the medical world for 10-15

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centuries with his works and ideas, and therefore, *the effect of ancient Greece on the Islamic medicine and pharmacy was very strong and active.* Islamic physicians and pharmacists, however, brought, many originalities to their fields. Among these Rhazes (854- 932), Dinaverî (895-992), Abulcasis (936-1013), Ebu Reyhan Birunî (973-1048), Avicenna (980-1037), Ibn Djuldjul, Ibn Vafid, Avenzoar (1094-1162), Averroes (1126-1198), Ibn Baïtar (1197-1248) should be mentioned. The works of these people did not lose their importance up to the Renaissance and helped to educate many generations.

Just like Islamic hospitals with their rich endowments and large personnel were the first non-religious health institutions, the first pharmacists working in these places under the names of «aşşab, tabbah-ı eşrîbe edviyagû or ispençiyar) were the first pharmacists independent from the physicians.

For centuries the Islamic hospitals had their own pharmacies, and apart from these, we see, as early as the eighth century A.D., the opening of the first privately owned pharmacies in Bagdad. In Europe, however, the physician and the pharmacist were separated by an order of the German emperor Frederick II (1211-1250) towards the middle of thirteenth century.

*Teaching of Pharmacy in the Anatolian Turcs:* In spite of these, in the East as well as in the West, we find up to the recent periods that the physician and pharmacist still continued to be the same person, and next door to the pharmacies were people working on roots and herbs. For this reason teaching of pharmacy in the Islamic world including the Anatolian Turcs, continued for centuries to pass over *from a master to his disciples.*

As the Moslems got hold of the Greek medicine and pharmacy through the Nestorians, the Anatolian Turcs inherited Islamic culture from the Seljucks, *and the origin our pharmacy, just like our medicine was Islamic, eastern, and classic.* For this reason, the Islamic hospitals became examples to the Anatolian health institutions getting established by the beginning of thirteenth century, such as the hospitals of Kayseri, Sivas, Divrik, Konya, Çankırı, Akşehir, Kastamonu, Tokat, Erzurum, Erzincan, Mardin, Amasya, etc. In these hospitals we, also, find an independent pharmacy in each one, several pharmacists, and a chief pharmacist. These pharmacists, besides assisting the physician in jobs related to health, continued teaching through their disciples.

Following the fall of the Anatolian Seljuks in 1308 up to the unification of Anatolia by the Ottomans, the Seljuks continued to serve as examples in every respect to the feudalities as well as to the Ottomans. Thus the Ottoman health institutions became a continuation of the Seljuk hospitals. Even their endowments were legally accepted by the Ottoman judges, and the Seljuk hospitals continued to serve the people under the Ottomans. In all these hospitals, one or more pharmacists were occupied, and like the physicians and surgeons, they worked under the supervision of the chief physician. In this way, for several more centuries the combination of physician and pharmacist persisted to be in the same person, while on the other hand independent pharmacists were also working in the pharmacies of these hospitals. That means the pharmacists were placed as a separate group of the medical staff.

*The class of military pharmacy in our modern medical school:* The method of knowledge passing over from a master to his assistants remained to be the custom in our country up to the middle of the nineteenth century. In 1839, during the modernisation of the Military Medical School «Mektebi Tıbbiyei Şâhâne», the Imperial Medical School at Galatasaray, Dr. Bernard instituted a class of military pharmacists who started their first courses in the same year. So, the beginning of modern pharmacy in Turkey is 1839. The program of the school covered three years and physics, chemistry, botanics, pharmacy, mathematics and materia medica were taught, as well as giving practical courses in pharmacies. Training was in Turkish. Because of the importance given to botanics and materia medica, a botanical garden was also built.

As a guide in these lessons our first codex, «Pharmacopée Militaire Ottomane» was written in French by Dr. Bernard in 1844. In the Galatasaray Medical School prescriptions were written in Latin, and the Turkish synonyms were also taught.

*The civilian pharmacy class:* On March 1, 1867 «Mektebi Tıbbiyei Mülkiye», the Civilian Medical School, was opened next to «Mektebi Tıbbiyei Şâhâne», the Military Medical School. The documents of the military medical and pharmacy classes were destroyed during the fire of the Galatasaray Medical School in 1849 and because of the frequent movings of the school. The documents of the civilian school are preserved, however, and according to these, a part of this school was a civilian pharmacy class. The program of this school was also three years. *The first student of civilian pharmacy was registered in 1870 and graduated in 1872.* Even though the establishment of this school was in 1870, its productive ope-

ration could only be achieved several years later by the appointment of the French chemist A. Calleja to the presidency of the school. The graduates of the school were occupied in municipal jobs as well as working in the army or the military pharmacies, and they carried military ranks.

At the beginning the training program of the school was as follows:

- First class : Inorganic chemistry  
Physics  
Geology  
Penal code  
Morals  
Religion
- Second class : Organic chemistry  
Botany
- Third class : Analytical chemistry  
Zoology  
Materia Medica

This program, however, was not found sufficient and the pharmacists brought up here needed practical experience. In 1860, when the Haydarpasha Military Hospital was converted into a military practical medical school, the pharmacists, as well as, the physicians began to attend there for postgraduate work. With the use of Turkish in teachings of the medical schools, medicine became popular, and even the graduates from pharmacy began to go to the medical faculty and received the physician's diploma. For this reason, the number of pharmacists in the army gradually diminished, just like that of surgeons. Consequently, we find an order issued in 1876 for the education of practical pharmacists in military hospitals, and up to 1891 pharmacists are also brought up in the practical school at Haydarpasha. As time went by, however, the military pharmacy class began to be supported, and inscription started again to the class of pharmacy at the Military Medical High School at Kuleli. This was followed by three years education at the Imperial Medical School and pharmacists graduated from here with the rank of first degree lieutenant. In the mean time, the program was also changed to improve education. About 1908, we find the program of the school to be as follows:

- First year : Inorganic chemistry  
Physics  
Geology  
Practical courses in pharmacies

- Second year : Botany  
Zoology  
Organic chemistry  
Pharmaceutics  
Practical courses in pharmacies
- Third year : Materia medica  
Analytical chemistry and microscopical studies  
Toxicology  
Microbiology  
Practical courses in pharmacies

At the same time, in order to overcome the need for health workers, we observe the institution of a civilian pharmacy class in the Civilian Medical School of Damascus in 1903. Like the physicians graduating from the Damascus medical school these pharmacists were being examined by a jury sent from Istanbul and their diplomas prepared in Istanbul. Those graduating from the pharmacy classes of the Beirut French and American Medical Schools received their diplomas from the civilian medical school of Istanbul. We also learn from registrations that the pharmacists trained in military hospitals, especially in Haydarpasha, and called «haydari» were examined in the civilian school from where they would receive their diplomas.

*The independent pharmacy school:* The separation of the pharmacy class from the medical school and the institution of an independent school in its own building could only be achieved in 1909. In this matter Prof. Dr. surgeon Cemil Pasha, contributed a great deal. In his memorandum published in 1951 the establishment of the school of pharmacy and dentistry at Kadirga and the obstetrical hospital are related as follows: «On July 24, 1908 the opening day of the second Parliament, all the teachers of the Imperial Medical School and their assistant professors gathered in the school building, and petitions were written to the Ministry of War for the improvement of the school and completion of its needs. In order to hold the Military Medical School in a tight discipline, the Sultan, Abdulhamid II, had placed us, like the other military schools under the control of Zeki Pasha, the commander of the military schools and «Tophane» (the cannon-house) (1891). Hüseyin Hüsnü Pasha from the Admiralty was appointed as the head of the Military Medical School. For the first time, this post was being occupied by someone who was not a physician, and our first job was to remove him from there. We sent him a message, telling him not to come to the school, and Hüsnü Pasha, who was a good-natured

man, did not even come close to the school. In place of him we chose Mazhar Pasha, the anatomy teacher. In order to obtain the required approval we, immediately, applied to the Ministry of War, and on July 29 we received the positive answer.

The Ministry of War left to us the improvement and reorganisation of the school. One afternoon, we, all the teachers, gathered in the big hall of the school. We decided to abolish the high school of the military medical school at Kuleli, and after long discussions, we reached the conclusion that two medical schools, civilian and military, were not needed and that they should be united under a new teaching staff and have a balanced budget.

At that time the Civilian Medical School had already acquired the title of 'faculty', thus, the medical schools came together in the building of the Imperial Medical School under the name of Haydarpasha Medical Faculty.

The building at Kadirga of the previous Civilian Medical School was then repaired and given to the pharmacists occupying the upper floor and the dentists the lower one. In this way the schools of pharmacy and dentistry were established. Besides these the old buildings of the school's hospital pavilions were repaired by the efforts of Prof Dr. Besim Ömer Pasha and transformed into an amphitheater and obstetrical hospital for the midwives who, up to that time, had only theoretical training at the medical school. This became the school for midwives and to the head of these three schools was appointed *Mustafa Münif Pasha*, who had been dismissed from the teaching staff of the Civilian Medical School.

The School of Pharmacy settling down in the wooden mansion of Mustafa Pasha from Menemen on October 6, 1909 stayed in this building up to 1925. At that time it was moved to the upper floor of the present day School of Dentistry, next to Bayezid General Library. In 1959 the school was moved again, this time to the present faculty building, occupying the old Prime Minister Fuat Pasha's mansion which had been converted into the Ministry of Finance.

During the reform in the University in 1933, the School of Pharmacy was joined to the Faculty of Sciences, but in 1944, with a proper decision of the Rector's Office, it became a part of the Medical Faculty.

Since 1938, the training period of the school was raised to four years, and the program at that time was as follows:

- First class :   Physics  
                  Chemistry (organic-inorganic)  
                  Botany  
                  Analytical chemistry  
                  Biology
- Second class :   Microbiology  
                  Pharmaceutical chemistry  
                  Pharmaceutical botany  
                  Physiology  
                  Deontology  
                  Book keeping  
                  Public Health  
                  Biological chemistry  
                  Pharmaceutics
- Third class :    Pharmaceutics and materia medica  
                  First aid  
                  Pharmacognosy  
                  Pharmaceutical chemistry  
                  Pharmacology
- Fourth class :   Pharmaceutics  
                  History of Medicine and Pharmacy and  
                  Deontology  
                  Book keeping  
                  Toxicology and war gases  
                  Biochemistry  
                  Food analysis  
                  Pharmaceutical chemistry

*Pharmacy Faculty of Istanbul:* In spite of the decision by the professorial board of İstanbul Medical Faculty to change the School of Pharmacy into a faculty, and its approval by the Senate in 1961 and the Ministry of Education in 1962, because of the completion of many formalities the school could only start functioning as a faculty on November 4, 1963.

The present training program is as follows:

A — FIRST TERM

Semester number:	Lectures		Laboratories	
	Hours per week:		Hours per semester:	
	I	II	I	II
Analytical Chemistry I	2	2	54	54
Physics	2	4	36	36
General Botany	2	2	36	36
General Chemistry	2	4	—	—
Mathematics	2	1	12	12
Zoology	2	1	—	—

B — SECOND TERM

Semester number:	Lectures		Laboratories	
	Hours per week:		Hours per semester:	
	III	IV	III	IV
Analytical Chemistry II	2	2	72	72
Biochemistry	2	1	—	24
Pharmaceutical Botany	2	2	36	36
Pharmaceutical Chemistry	2	2	—	—
Physiology	2	2	—	—
Public health	1	—	—	—
Pharmaceutical Latin	1	2	—	—
Microbiology	2	2	—	24
Human Anatomy	2	2	—	—

C — THIRD TERM

Semester number:	Lectures				Laboratories			
	Hours per week:				Hours per semester:			
	V	VI	VII	VIII	V	VI	VII	VIII
Pharmaceutical Jurisprudence	1	—	—	—	1	—	—	—
History of Pharmacy and Deontology	2	—	1	1	—	—	—	—
Pharmacognosy	4	1	1	1	18	18	36	36
Pharmacology	2	3	3	—	—	12	—	—
Pharmaceutical Chemistry II	4	3	3	2	3	48	48	72
Pharmaceutics	4	3	3	3	3	48	48	72
Food Analysis	1	2	—	—	—	36	—	—
First Aid	1	—	2	—	—	—	—	—
Toxicology	1	—	2	—	—	36	—	—



For the transformation of the school into a faculty the Society of Turkish Pharmacologists had applied back in 1931 to the Parliament unsuccessfully. The success of this last effort, however, was facilitated by the opening of the Faculty of Pharmacy in Ankara in 1961 in accordance with the law numbered 156, as much as, the suggestions to the professorial board of the Medical Faculty of the young valuable teaching staff brought up in the School of Pharmacy.

The Faculty of Pharmacy had, at the beginning, four independent departments. In 1964 toxicology was separated from analytical chemistry and pharmaceutical botany from pharmacognosy. Thus, the number of independent departments became six, and the present teaching staff is as follows:

- 1 — Analytical chemistry  
Director : Prof. Dr. Rasim TULUS
- 2 — Pharmacognosy  
Director : Prof. Dr. Sarım CELEBİOĞLU  
Teaching staff : Prof. Dr. Turhan BAYTOP  
Asst. Prof. Dr. Mekin TANKER
- 3 — Pharmaceutical botanics  
Director : Prof. Dr. Asuman BAYTOP  
Teaching staff : Asst. Prof. Dr. Nevin TANKER
- 4 — Pharmaceutical chemistry  
Director : Prof. Dr. Hayriye AMÂL  
Teaching staff : Asst. Prof. Dr. Semiha TULUS  
Asst. Prof. Dr. Nedime ERGENÇ
- 5 — Galenic pharmacy  
Director : Prof. Dr. Kasım Cemal GÜVEN
- 6 — Toxicology  
Person in charge : Asst. Prof. Dr. Hayri SÖZEN

Because of the lack of the law of organisation the following lessons are still taught by the teaching staff of other faculties:

- Biochemistry : Ass. Prof. Dr. Şevket TEKMAN  
(Medical Faculty)
- Jurisprudence : Prof. Dr. Kasım C. GÜVEN  
(Faculty of Pharmacy)

History of Pharmacy and Deontology :	Prof. Dr. Bedi N. ŞEHSUVAROĞLU (Medical Faculty)
Pharmacology :	Prof. Dr. Alâettin AKÇASU (Medical Faculty)
Physiology :	Asst. Prof. Dr. Nurhan GÖKHAN (Medical Faculty)
Food Analysis :	Asst. Prof. Hayri SÖZEN (Faculty of Pharmacy) :
Public Health :	Prof. Dr. Sitki VELICANGIL (Medical Faculty)
First aid	Prof. Dr. Derviş MANİZEDE (Medical Faculty)
Human anatomy :	Prof. Dr. Fazıl NOYAN (Medical Faculty)
Pharmaceutical Latin :	Dr. Heinrich H. Brunner
Microbiology :	Prof. Dr. Tali ÇETİN (Medical Faculty)
Zoology :	Prof. Dr. Atif ŞENGÜN (Faculty of Science).

*Directors of the School of Pharmacy and the duration of their services in this post :*

- 1 — Dr. Mustafa Münif Pasha - Kocaolçum, from 1909 to 1916.
- 2 — Dr. Mazhar Hüsnü Bey, from 1916 to 1920. After his dismissal from this post the school was directed by a representative.
- 3 — Dr. Server Hilmi Bey - Büyükaksoy, from June 15, 1922 to April 2, 1930.
- 4 — Dr. Said Cemil Bey, from April 8, 1931 to December 2, 1932.
- 5 — Dr. Mahir Tokay, from December 24, 1932, to April 4, 1933. After his resignation on that date Dr. Ziya Bey served representatively up to June 31, 1933.
- 6 — Dr. Akif Aykut, from July 1, 1933 to January 20, 1939. After his death the dean of the Faculty of Sciences, Prof. Ali Yar, and Prof. Fahir Yeniçay were successively in charge of the school up to 1944 when the school was joined to the Faculty of Medicine.
- 7 — Ord. Prof. Dr. Ziya Öktem, from January 8, 1945 to July 25, 1948.
- 8 — Ord. Prof. Dr. Üveis Maskar, from July 12, 1948 to May 20, 1955.
- 9 — Prof. Dr. Ömer Özek, from May 20, 1955 to July 15, 1959.
- 10 — Prof. Rasim Tulus, from July 16, 1959 to November 7, 1962.
- 11 — Prof. Dr. Alâettin Akçasu, from November 8, 1962; to October 17, 1963. At that time the school became a faculty, and Prof. Dr. Pharm. Turhan Baytop was elected Dean of the Faculty of Pharmacy.

*Deans of the Faculty of Pharmacy:*

- 1 — Prof. Dr. Pharm Turhan Baytop from October 17, 1963 to May 11, 1965.

## İLMİ HABERLER

### I — Tezler

1. «Tabletlerin film kaplanması ve barsakta dağılan tablet hazırlanması» — Ecz. Günsel Bayraktar, 1964 (Doktora tezi).
2. «Anadoludaki bazı Cyclamen türleri üzerinde farmakognozik araştırmalar» — Ecz. Dr. Nevin Tanker, 1964 (Doçentlik tezi).
3. «Helleborus orientalis Lam. var. hirsutus (Schiffner) Hay. bitkisi üzerinde farmakognozik araştırmalar» — Ecz. Günsel Malkoç, 1965 (Doktora tezi).

### II — Ders Kitapları

1. Farmasötik Kimya I, Anorganik bileşikler ve organomineraller, 3. baskı — Prof. Dr. Hayriye Amâl, İstanbul Üniv. Yay. 1036, Eczacılık Fak. Yay. 1, İsmail Akgün Matbaası, İstanbul, 1963.
2. Farmakognozi, repetitorium — Prof. Dr. Sarım Çelebioğlu, Çelikkilt Matbaası, İstanbul, 1963.
3. Türkiyenin tıbbi ve zehirli bitkileri — Prof. Dr. Turhan Baytop, İstanbul Üniv. Yay. 1039, Tıp Fak. Yay. 59, İsmail Akgün Matbaası, İstanbul 1963.
4. Drog tozlarının mikroskopik analizi, repetitorium — Prof. Dr. Sarım Çelebioğlu, Çelikkilt Matbaası, İstanbul, 1964.
5. Kantitatif Analiz, 2. baskı — Prof. Dr. M. Rasim Tulus, İstanbul Üniv. Yay. 1104, Eczacılık Fak. Yay. 2, Şirketi Mürettibiye Basımevi, İstanbul, 1964.
6. Bitkisel drogların anatomik yapısı — Prof. Dr. Asuman Baytop, Baha Matbaası, İstanbul, 1965.
7. Eczacılık mevzuatı — Prof. Dr. Kasım Cemal Güven, Hüsnütabiat Matbaası, İstanbul, 1965.

**III — Konferanslar**

1. «Elektronların tertiplenme tarzları ve kimyasal bağlar hakkında yeni görüşler» — Prof. Dr. S. Fallab (Basel Üniversitesi Öğretim üyelerinden), 27 Kasım 1963 günü Eczacılık Fakültesinde.

2. «Ekvator, Peru ve Şili'nin tıbbi bitkileri» — Prof. Dr. F. Sandberg (Stokholm Eczacılık Enstitüsü öğretim üyelerinden), 11 Aralık 1964 günü Eczacılık Fakültesinde.

3. «Kanserin şimioterapisi» — Prof. Dr. E. Boyland (Londra Üniversitesi öğretim üyelerinden), 28 Nisan 1965 günü Eczacılık Fakültesinde.

4. «Solanaceae'lerde biogenetik ve farmakoşimik meseleler» ve «Bitkisel droglarda yeni müessir maddeler elde etme yolları» — Prof. Dr. E. Steinegger (Bern Üniversitesi Eczacılık Enstitüsü öğretim üyelerinden), 4, 5 ve 7 Mayıs 1965 günlerinde Eczacılık Fakültesinde.