Pharmaceutical Industry in Turkey[1]

Dogan UVEY*, Ayse Nur GOKCE*, Ibrahim BASAGAOGLU**

* Istanbul University, Faculty of Medicine, Department of Deontology and Medical History, TURKEY

** Istanbul University, Cerrahpasha Medical Faculty, Department of Deontology and Medical History, TURKEY
e-mail: ibasagaoglu@tnn.net

Summary

During the Ottoman period drugs were prepared by physicians. In the beginning of the 19th century drugs started to be prepared in pharmacies called "saydalan" and "ispençiyar". Official pharmaceutical education was assumed to start in Turkey with the "Eczane Sınıfı" (pharmaceutical class) in "Mekteb-i Tıbbiye-i Şahane" (The Royal School of Medicine).

Two kinds of drug preparations were on sale at the pharmacies in Istanbul.
1. Foreign Medical preparations
2. Local Medical preparations

Local drug production can be studied in 4 periods.
1. The pharmacy period
2. The laboratory period
3. The factory period
4. The active drug matter production period

By 2003 there exist 85 drug producers, 11 raw material producers, 38 importers, totaling to 134 firms. With a product variety up to 4000 kinds amounting to a capacity of TL 50 trillion, Turkey exports preparations and active drug matter up to 50 countries.

Key words; Drug, Preparation, Industry.

During the early Ottoman period drugs were generally prepared by physicians. Rooms called "Hekim Dükkanı" (Physician's Store) functioned as drugs preparatory locations as well as treatment centers. In the following years the duty to prepare drugs were substantially overtaken by pharmacists known as "Saydalan" or "İspençiyar", which is a piece of information revealed from the court registrations dated August 1467 in Bursa.

The official pharmaceutical education in Turkey is assumed to begin with the "Eczacı Sınıfı" (Class of Pharmacists) at "Mekteb-i Tıbbiye-i Adliye-i Şahane" (The Royal School of Medicine) (1).

The renowned chemists teacher of The School of Medicine, Antonnia Kalleja, indicated in one of his writings that at the time there were two kinds of drug preparations in Istanbul, *Tiryak* and *Oğulotu*.

With widely use and increasing importance of medical preparations among physicians, pharmacists and the public, new drug compounds were prepared in "İngiliz Eczanesi" (the English Pharmacy) laboratories launched by Kanzuk and these were put on the market.

As of the launch of local drugs, patients were given two options for drugs to choose from:

1. Foreign Medical Preparations
2. Local Medical Preparations: The first apothecary preparations of the Ottoman period were prepared by owners of big pharmacies like *Büyük Eczane*, *İngiliz Eczanesi*, *Avusturya* and *Macar Eczanesi* and *Büyük Paris Eczanesi,* which were owned by Christian pharmacists.

Among Muslim pharmacists Hacı Hamdi Bey is the first to have prepared the first drug compounds. In the pharmacy he opened in the *Zeyrek Yokuşu* in

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1880, he contributed to public health with the drugs he named "**Kola Hamdi, Elixir Digestif Hamdi, Kefir**".

As a good example, he was followed by pharmacists such as Abdi İbrahim, Ethem Pertev, Beşir Kemal, Hasan Rauf and Mustafa Nevzat (2).

Ready drug preparation can be divided into four periods:

1. Pharmacy period
2. Laboratory period
3. Factory period
4. Drug active matter production period

1- Pharmacy Period

The first local drug preparations, formulated either in pharmacy laboratories or small workshops during the "Pharmacy period" covering the period between 1833 and 1927, were prepared as mere imitations of imported and high-selling drug preparations. After a while the commonly used formulas by the renowned physicians of the time were prepared at pharmacies and presented to patients.

2- Laboratory Period

The number of local drug preparations in Turkey in 1930 was about 300, most of which were prepared at pharmacies while 20 of them at laboratories. What brought the end of small local pharmacies were "**The Foreign Capital Incentive Law**" enforced in 1954 paving the way for giant foreign pharmaceutical companies to come to our country to establish drug production factories, which coupled with the enforcement of "**The Pharmacies and Medical Preparations Laboratories Regulations**" dated 1954, which brought heavy financial responsibilities to the companies in question when they established factories and production facilities. Furthermore, the law required the allocation of a separate building for drug production. The mentioned points were mainly legislated with the entrance of foreign companies to the market, but caused some small initiatives to get out of business and others to merge with foreign companies, thus maintaining their existence.

3- Factory Period

Fabricated drug production in Turkey started in 1952 with the establishment of "**Eczacıbaşı İlaç Fabrikası**" (Eczacıbasi Pharmaceutical Factory) in Levent, Istanbul. With the requirement of regulations, many small local companies moved into their separate facilities, which they built with great effort, undertaking great financial difficulties, renewing their techniques and merging with foreign companies, thus keeping pace with the latest trend, that is, serial production. As a result of these developments, the "all-local" pharmaceutical preparations formulized by Turkish pharmacists were gradually left aside and foreign preparations were started to be produced (**Abdi İbrahim**, **Eczacıbaşı, İbrahim Ethem, Fako, Mustafa Nevzat**). While local firms maintained producing foreign products under license agreements, some foreign-based firms (**Roche, Bayer, Sandoz etc.**) started to produce at their own facilities. Harmonizing the accumulation of knowledge and experience gathered during the previous pharmacy-laboratory periods, the Turkish pharmaceutical industry, especially as of 1990, managed to improve itself by keeping pace with the latest technology and world standards. In 2002 the Turkish pharmaceutical industry increased its capacity to satisfy 90 % of the domestic market, besides realizing exports. The golden period of the Turkish pharmaceutical sector started with the foundation of the Employer's Union of Pharmaceutical Industry in 1964, aiming at moving in unison to be successful at world standards (3).

Today, 134 companies operate in the Turkish pharmaceutical industry;

- 85 pharmaceutical manufacturers
- 11 raw material manufacturers
- 38 importers

8 out of 35 companies operating with foreign capital have their own production facilities in our country. The others put their products in the market either through importing or fason production (4). If the geographic distribution in the pharmaceutical sector is studied, it will be obvious that due to various factors such as the existence of a convenient infrastructure,

packing equipment, qualified technical personnel, transportation and communication means, and the density of health institutions in the Marmara Region caused most of the big pharmaceutical companies to establish their factories in **İstanbul, Kocaeli** and **Tekirdağ**.

Employment

While in 1995 the number of employees working in the pharmaceutical sector was 12.634, the figure rose 38%, amounting to 17.440 employees in 1999. Due to its requirements, the pharmaceutical industry employs the most qualified, university graduate employees in the market. The rate in 1999 rose 46%.

Raw Material Production

Pharmaceutical raw material production in our country began in 1971 with the **tetrasiklin** production, coupling with the establishment of facilities producing other semi-synthetic material such as **penicillin** and **sephalosporin** and becoming a sector producing the active matter of various drugs by means of **fermentation**, **extraction** and **synthesis** in order to substantially get **antibiotics** and **analgesics**. The foundations of pharmaceutical raw material sector were laid by private sector.

The only state initiative is the **Afyon Alcholoid Factory**. Production facilities mostly belong to local firms. Today only one firm with foreign capital operates in the market.

There was a substantial decrease in production level between 1995-2000. Following the Customs Union the funds applied at importing active matters of locally produced drugs were abolished, which brought along a competitive environment where, in the course of time, the incentives were cancelled, playing important roles in the decrease. The production of synthetic penicillin, which held a grand importance in drug raw material sector in 1970s and 1980s, came to a complete halt (7).

Employment Figures in the Pharmaceutical Sector (5)

Branches	**Number of Employees**
Pharmacist	620
Chemical Engineer	740
Chemist	565
Physician	299
Biologist	758
Other Engineers	866
Economist	727
Other University Graduate Personnel	3,581
Managerial Personnel	3,567
Technician	643
Laboratory Assistant	273
Qualified Personnel	1,854
Unqualified Personnel	2,946
Total	17,440 (4)

Consumption

In 1999, drug sale at the value of $2.5 billion was realized in Turkey.

According to the data belonging to 1999 regarding the treatment groups: antibiotics ranks first with 20%, painkillers second with 13%, drugs for cold, rheumatism drugs and vitamins rank next.

Foreign Trade

Export

The Turkish pharmaceutical industry has acquired a level of quality, activity and trust so as to compete with many countries operating in the sector. In 1999 the export figures of the sector amounted to more than 50 countries including **Germany**, **U.S.A**, **Belgium, Finland**, **Holland**, **England**, **Switzerland**, **Italy** and **Japan.** The Turkish pharmaceutical industry has to continuously make both technical and marketing investments in order to keep pace with the ever-increasing cost of technical requirements and to be successful at foreign markets. However, the problems arising from the pricing system of Turkey, **high level of Value Added Tax (VAT) rates**, the drawbacks emerged in recent years have prevented the sector to obtain a high level of profit margin. Financially weak firms are not expected to display a high level of competitiveness. Thus, to support and strengthen the Turkish pharmaceutical industry hold a privileged position.

Export of the pharmaceutical Sector *(million $)* (7)

	Years	Raw Material	Drugs produced
1997	39	59	98
1998	61	68	129
1999	67	61	128

Conclusion

Today, the national and international pharmaceutical firms are among the most prominent sectors as a result of the efforts they have spent for 50 years in order to bring the Turkish pharmaceutical industry to a higher level. The contribution of the **Pharmaceutical Industry Employers' Union** in the mentioned progress should not be omitted. Opening to foreign markets speeded up with the tightening relations with the Turkish republics. The Turkish pharmaceutical industry has always been in touch with various organizations such as International Federation of Pharmaceutical Manufacturers, Pharmaceutical Group of the European Union, European Association of Pharmaceutical Wholesalers. As a result of the close relationship and application of the decisions in the sector, the Turkish industry covered a large gap and took strong steps towards betterment and development.

The foundations of the Turkish pharmaceutical industry were laid with the drug preparations in pharmacy laboratories in 1860, and today the sector maintains its production in about **100** modern production facilities with up to **4000** medical products, **TL 50 trillion** production value, an export capacity of **$ 150 million** to **50** countries, besides being able to export drug preparations and drug active matters and to satisfy the local market by **90 %**.

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