

History of Turkey's Graduate Programs in the Field of Pharmacy and the Development of the Last Five Years: Review

Türkiye'de Eczacılık Alanında Yapılan Yüksek Lisans Programlarının Tarihçesi ve Son Beş Yıllık Gelişimi

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ABSTRACT In Turkey, the doctorates have been started in the 1930's. The first doctorates were done at the Higher Institute of Agriculture in Ankara established in 1933. It was followed by doctorates from Istanbul University established again in 1933. Ph.D. necessity was introduced by University Law No. 4936 which was issued in 1946. Before 1946, the number of the doctorates from Istanbul University has been limited, after this date onwards there has been a significant increase due to the necessity. The first Ph.D. in the field of Pharmacy was completed by Hayriye Amâl in 1942. Until 1981, graduate education was performed under the direction of the faculties. By the Higher Education Law 50th Article (No. 2547) accepted on November 4, 1981 and came into force on November 6, 1981, graduate education was performed under the direction of the Institutes under the Rector of universities. Subsequently, by the "Decree on the Establishment of Higher Education Institutions" (No. 41) which was issued on July 20, 1982, universities were re-structured and Institutes of Physical Sciences, Health Science and Social Sciences affiliated with the Rector of universities were established to execute graduate education. As a result, graduate education that was given by the Faculties of Pharmacy was transferred to the Health Science Institutes in 1983. Today, in our country, pharmacy education and trainings continue in pharmacy faculties of various universities and there are totally 31 pharmacy faculties but only 17 of them provide education, the others are at the opening stage. In this study, the history of the pharmacy faculties' graduate programs in our country will be presented, and additionally the current situation will be revealed by putting forth the graduate studies at departments in the last five years between 2008 and 2012.

Key Words: Education, graduate; faculty; academies and institutes

ÖZET Türkiye'de doktora çalışmalarına 1930'lu yıllarda başlanmıştır. İlk doktoralar 1933'te kurulan Ankara'daki Yüksek Ziraat Enstitüsünde yapılmış ve bunu gene 1933'te kurulan İstanbul Üniversitesinde yapılan doktoralar izlemiştir. Doktora zorunluluğu 1946'da çıkarılan 4936 sayılı Üniversiteler Kanunu ile getirilmiştir. 1946 öncesinde İstanbul Üniversitesinde yapılan doktoraların sayısı sınırlı kalmış ve bu tarihten sonra zorunluluk nedeniyle önemli bir artış göstermiştir. Eczacılık alanında ilk doktora 1942'de Hayriye Amâl tarafından yapılmıştır. Yüksek lisans eğitimi 1981 yılına kadar fakültelerin bünyesinde ve yönetiminde yapılırken, 4 Kasım 1981 tarihinde kabul edilip, 6 Kasım 1981 tarihinde yürürlüğe giren 2547 sayılı "Yükseköğretim Kanunu'nun 50. Maddesi" ile yüksek lisans eğitiminin üniversite rektörlüklerine bağlı enstitülerde yapılması esası getirilmiştir. Bunun ardından 20 Temmuz 1982 tarihinde çıkartılan "41 sayılı Yükseköğretim Kurumları Teşkilatı Hakkında Kanun Hükmünde Kararname" ile üniversiteler yeniden düzenlenirken, yüksek lisans eğitimi yürütmek üzere üniversite rektörlüklerine bağlı olarak Fen Bilimleri, Sağlık Bilimleri ve Sosyal Bilimler Enstitüleri kurulmuştur. Bunun sonucunda Eczacılık Fakültelerinde yürütülmekte olan yüksek lisans eğitimi 1983 yılından itibaren Sağlık Bilimleri Enstitülerinin bünyesine aktarılmıştır. Günümüzde eczacılık eğitim ve eğitimi ülkemizde değişik üniversitelerin eczacılık fakültelerinde sürdürülmektedir. Ülkemizde açılma aşamasında bulunan fakültelerle birlikte toplam 31 fakülteden ancak 17'sinde eğitim verilmektedir. Bu çalışmada, ülkemizdeki eczacılık fakültelerinin yaptırdığı yüksek lisans programlarının tarihçesi sunulacak, bunun yanı sıra 2008-2012 yılları arasında kapsayan son beş yılda anabilim dallarında yapılan yüksek lisans çalışmaları saptanarak, bugünkü duruma konmaya çalışılacaktır.

Anahtar Kelimeler: Eğitim, yüksek lisans; fakülte; akademiler ve enstitüler

In Turkey, the idea of establishing a “university” similar to west example was first adopted after the declaration of the Tanzimat by regulations in education. After several unsuccessful attempts, “Darülfünun” was founded in Istanbul. Despite all precautions, Darülfünun was unable to get the quality of a real university existed until 1933. The early years of the Republic, the result of studies with the first higher education reform, which was started for structuring modern university’s system and upgrading the level of education and scientific research activities in higher education institutions to contemporary countries’ level, in 1933 “Darülfünun” was closed and Istanbul University was established in place of it. That same year also Higher Institute of Agriculture which had structural and functional university qualification was established in Ankara.^{1,2}

Giving of doctoral degree by Darülfünun was uncertain in 1912 Istanbul Darülfünun’s *Instruction* and was clearly stated in 1919 Darülfünun-i Osmanî Nizamnamesi but there is no doctoral study prepared in Darülfünun.^{2,3}

In Turkey, the doctorates have been started in the 1930’s. The first doctorates were done at the Higher Institute of Agriculture in Ankara established in 1933. It was followed by doctorates from Istanbul University established again in 1933. Doctorate necessity was introduced by University Law No. 4936 issued in 1946 (Title 18).^{1,2} Before 1946, the number of the doctorates from Istanbul University has been limited, after this date onwards there has been a significant increase due to the necessity.¹

In the pharmacy field there were five doctoral studies before 1949. The first Ph.D. in this field was completed by Hayriye Amâl in 1942 (Faculty of Science, Pharmacy School, Pharmaceutical Chemistry Inst.).¹ After that in 1943 Kemal Erali (Faculty of Science, Pharmacy School, Galenic Pharmacy Inst.), in 1944 Zehra Sezer (Faculty of Science, Pharmacy School, Pharmaceutical Chemistry Inst.), in 1948 Semiha Bayraktar (Faculty of Medicine, Pharmacy School, Galenic Pharmacy Inst.) have completed their doctorates.²

Ph.D. at Istanbul University School of Pharmacy began to be made in accordance with the *School of Pharmacy Doctoral Regulations* came into force on February 1949. According to this regulation, the first Dr. Pharmacist title was given to Hasibe Koçak (Galenic Pharmacy assistant) on 04/04/1949. Between the years of 1949-1955 title of Dr. Pharmacist was given to nine people, eight of them were Turkish (Hasibe Koçak-1949, Hikmet Eltutar-1949, Adalet Özger-1949, Turhan Baytop-1949, Necla Daî-1950, Kasım C. Güven-1953, A. Fethi Egemen-1953, Osman Y. İzgi-1955) and one of them was foreign (Ulrich Leiner-1954).^{2,4}

Pharmacy Ph.D. studies abroad until 1965 were done by Muammer Enver Öztekin (France, 1931), Sarım Hüsnü Çelebioğlu (Germany, 1932), Asuman Berk Baytop (Switzerland, 1949), Güzin Tamaç Poffet (Switzerland, 1957), Bayhan Çubukcu (France, 1962) and İ. Sedat İmre (Germany, 1963).¹

Between the years of 1949-1973 in Istanbul University High School and Faculty of Pharmacy 60 doctoral studies were made.⁵ In period of 1970-1983, 101 theses were done in different departments but there weren’t any thesis in 1945, 1946, 1947, 1951, 1952, 1958 and 1962.¹

First Ph.D. studies in different departments at Istanbul University High School were as following:

Pharmaceutical Chemistry: Hayriye Amâl (February 19, 1942, the Supervisor: Prof. Dr. Pierre Duquenois)

Pharmacognosy: Ömer Turhan Baytop (June 1, 1949, the Supervisor: Ord. Prof. Dr. Alfred Heilbronn)

Galenic Pharmacy: Kemal Erali (December 28, 1943 the Supervisor: Prof. Dr. Leopold Rosenthaler)

Analytical Chemistry: Osman Yüce İzgi (1955, the Supervisor: Prof. Dr. Rasim Tulus)

General Chemistry: Sabiha Kartın (1971, the Supervisor: Prof. Dr. Ayhan Ulubelen)

Biochemistry: Behire Tezcan (1970, the Supervisor: Prof. Dr. Şevket Tekman)

Pharmaceutical Botany: Tekand Gözler and Gözde Ertem (1970, the Supervisor: Prof. Dr. Asuman Baytop)

Microbiology: Candan Bozok (March 25, 1971, the Supervisor: Prof. Dr. Kasım Cemal Güven)

Pharmacology: Ayhan Köseoğlu (1972, the Supervisor: Prof. Dr. Gültekin Sunam)

Toxicology: Ömer Ersoy (July 11, 1975, the Supervisor: Prof. Dr. Zeliha Imre)¹.

Until 1981, graduate education was performed under the direction of the faculties. By the Higher Education Law 50th Article (No. 2547) accepted on November 4, 1981 and came into force on November 6, 1981, graduate education was performed under the direction of the Institutes under the Rector of universities. Subsequently, by the "Decree on the Establishment of Higher Education Institutions" (No. 41) issued on July 20, 1982 universities were re-structured and Institutes of Physical Sciences, Health Science and Social Sciences, affiliated with the Rector of universities, were established to execute graduate education. As a result, graduate education that was given by the Faculties of Pharmacy

was transferred to the Health Science Institutes in 1983.^{1,2,6,7} Today, in our country, pharmacy education and trainings continue in pharmacy faculties of various universities and there are totally 31 pharmacy faculties but only 17 of them provide education, the others are at the opening stage (Table 1).

Health Science Institutes that made studies in the field of pharmacy in our country are given in Table 2.

MATERIAL AND METHODS

The data and materials of this study are obtained from Deans of Faculty of Pharmacies, Health Science Institutes which the pharmacy faculties in Turkey are affiliated, departments of the pharmacy faculties, issued almanacs at various universities' pharmacy faculties and Higher Education Council (HEC) thesis scanning pages.

RESULTS

According to the data obtained from our study, data of 12 faculty of pharmacy in Turkey which have graduate education, turned into tables. In

TABLE 1: Pharmacy faculties in Turkish universities.

University	Foundation Year	University	Foundation Year
Ankara University*	1960	Adıyaman University***	2011
İstanbul University*	1962	Ağrı İbrahim Çeçen University***	2011
Hacettepe University*	1971	Trakya University***	2011
Ege University*	1974	Cumhuriyet University***	2011
Gazi University*	1982	Çukurova University ***	2011
Marmara University*	1982	Yüzüncü Yıl University***	2011
Anadolu University*	1982	Kemerburgaz University**	2012
Atatürk University*	1997	Dicle University ***	2012
Mersin University*	2000	Bülent Ecevit University ***	2012
İnönü University*	2001	Afyon Kocatepe University***	2012
Yeditepe University**	2001	Süleyman Demirel University***	2012
Erciyes University*	2003	Erzincan University ***	2012
Karadeniz Teknik University*	2003	Katip Çelebi University***	2012
Bezm-i Alem Vakıf University**	2010	Başkent University ***	
Yeni Yüzyıl University**	2010	Mevlana University ***	
İstanbul Medipol University**	2010		

*Pharmacy Faculties currently providing education in public universities

** Pharmacy Faculties currently providing education in private universities

*** Pharmacy Faculties currently not providing education

TABLE 2: Health science institutes making studies in the field of pharmacy in our country.

University	Foundation Year	Institutes	Foundation Year
Ankara University	1982	Gazi University	1982
İstanbul University	1982	Atatürk University	1983
Hacettepe University	1982	İnönü University	1992
Ege University	1982	Anadolu University	1993
Erciyes University	1982	Yeditepe University	1996
Marmara University	1982	Mersin University	1999

these tables, master and doctoral studies at pharmacy faculties' departments are given numerical bases on universities. In the study universities that have graduate education in the field of pharmacy have been listed in alphabetical order.

Anadolu University, Faculty of Pharmacy was established in 1982, and at the 1982-1983 academic year postgraduate education at Anadolu University Health Science Institute began. In Table 3, quantitative data of graduate studies conducted at Anadolu University, Faculty of Pharmacy in the period of 2008-2012, were given.

According to Table 3, between the years of 2008-2012 at Anadolu University Faculty of Pharmacy totally 11 Ph.D. and 27 M.Sc. studies were conducted.

Ankara University, Faculty of Pharmacy was established in 1960, and at the 1993-1994 academic year graduate education at Ankara University Health Science Institute began. In Table 4, quantitative data of graduate studies conducted at Ankara

University, Faculty of Pharmacy in the period of 2008-2012, were given.

According to Table 4, between the years of 2008-2012 at Ankara University Faculty of Pharmacy totally 49 Ph.D. and 149 M.Sc. studies were conducted.

Atatürk University, Faculty of Pharmacy was established in 1997, and at the 1983-1984 academic year graduate education at Atatürk University Health Science Institute began. In Table 5, quantitative data of graduate studies conducted at Atatürk University, Faculty of Pharmacy in the period of 2008-2012, were given.

According to Table 5, between the years of 2008-2012 at Atatürk University Faculty of Pharmacy totally 6 Ph.D. and 14 M.Sc. studies were conducted.

Ege University, Faculty of Pharmacy was established in 1974, and at the 1982-1983 academic year postgraduate education at Ege University Health Science Institute began. In Table 6, quanti-

TABLE 3: Doctorate and master studies that have been conducted between the years 2008-2012 at Anadolu University, Faculty of Pharmacy.

Year Department	2008		2009		2010		2011		2012		Total	
	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.
Analytical Chemistry	-	-	3	-	-	1	-	-	-	1	3	2
Biochemistry	-	2	-	-	-	-	-	-	-	-	-	2
Pharmaceutical Chemistry	-	-	1	2	-	-	-	1	2	-	3	3
Pharmaceutical Technology	-	-	-	-	-	1	-	-	1	-	1	1
Pharmacognosy	-	-	1	3	-	5	-	2	-	1	1	11
Pharmacology	-	1	2	2	1	3	-	1	-	1	3	8
Total	-	3	7	7	1	10	-	4	3	3	11	27

Ph.D.: Doctor of Philosophy; M.Sc.: Master of Science.

TABLE 4: Doctorate and master studies that have been conducted between the years 2008-2012 at Ankara University, Faculty of Pharmacy.

Year Department	2008		2009		2010		2011		2012		Total	
	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.
Analytical Chemistry	1	10	1	3	1	10	1	2	-	-	4	25
Biochemistry	-	-	-	3	-	1	-	1	-	-	0	5
Pharmacy Management	1	4	1	1	-	1	1	-	-	-	3	6
Pharmaceutical Chemistry	-	6	3	4	1	8	1	3	1	3	6	24
Pharmaceutical Technology	3	11	5	4	1	1	1	4	-	-	10	20
Pharmaceutical Botany	1	2	-	-	3	2	-	-	-	-	4	4
Pharmacognosy	-	3	2	4	-	6	2	3	-	2	4	18
Pharmacology	1	-	1	6	3	3	2	2	-	5	7	16
Pharmaceutical Toxicology	1	5	1	2	1	5	2	4	3	-	8	16
Pharmaceutical Microbiology	-	2	1	1	1	1	1	3	-	3	3	10
Interdisciplinary Clinical Pharmacy	-	2	-	3	-	-	-	-	-	-	0	5
Total	8	45	15	31	11	38	11	22	4	13	49	149

Ph.D.: Doctor of Philosophy; M.Sc.: Master of Science.

TABLE 5: Doctorate and master studies that have been conducted between the years 2008-2012 at Atatürk University, Faculty of Pharmacy.

Year Department	2008		2009		2010		2011		2012		Total	
	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.
Analytical Chemistry	1	1	-	1	-	1	1	-	-	1	2	4
Biochemistry	-	2	-	1	-	-	-	2	-	-	0	5
Pharmaceutical Chemistry	-	-	2	-	-	-	-	1	-	-	2	1
Pharmaceutical Technology	-	-	-	-	-	1	-	-	-	-	0	1
Pharmacognosy	-	-	-	2	-	-	1	1	1	-	2	3
Total	1	3	2	4	-	2	2	4	1	1	6	14

Ph.D.: Doctor of Philosophy; M.Sc.: Master of Science.

tative data of graduate studies conducted at Ege University, Faculty of Pharmacy in the period of 2008-2012, were given.

According to Table 6, between the years of 2008-2012 at Ege University Faculty of Pharmacy totally 20 Ph.D. and 53 M.Sc. studies were conducted.

Erciyes University, Faculty of Pharmacy was established in 2003, and at the 1982-1983 academic year graduate education at Erciyes University Health Science Institute began. In Table 7, quantitative data of graduate studies conducted at Erciyes University, Faculty of Pharmacy in the period of 2008-2012, were given.

According to Table 7, between the years of 2008-2012 at Erciyes University Faculty of Phar-

macy totally 1 Ph.D. and 26 M.Sc. studies were conducted.

Gazi University, Faculty of Pharmacy was established in 1982, and at the 1982-1983 academic year graduate education at Gazi University Health Science Institute began. In Table 8, quantitative data of graduate studies conducted at Gazi University, Faculty of Pharmacy in the period of 2008-2012, were given.

According to Table 8, between the years of 2008-2012 at Gazi University Faculty of Pharmacy totally 25 Ph.D. and 160 M.Sc. studies were conducted.

Hacettepe University, Faculty of Pharmacy was established in 1971, and at the 1982-1983 aca-

TABLE 6: Doctorate and master studies that have been conducted between the years 2008-2012 at Ege University, Faculty of Pharmacy.

Year Department	2008		2009		2010		2011		2012		Total	
	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.
Analytical Chemistry	1	-	-	3	1	1	-	2	-	1	2	7
Biochemistry	-	-	-	1	-	1	1	-	-	-	1	2
Pharmaceutical Chemistry	-	-	-	1	-	2	-	-	-	-	0	3
Radiopharmacy	-	1	-	-	-	-	-	-	-	-	0	1
Biopharmaceutics and Pharmacokinetics	-	1	-	1	-	3	-	2	-	-	0	7
Pharmaceutical Technology	2	3	3	2	2	2	2	-	-	-	9	7
Pharmaceutical Botany	-	-	1	-	-	1	-	5	-	-	1	6
Pharmacognosy	-	-	3	1	1	3	-	1	-	-	4	5
Pharmacology	2	-	-	1	-	-	1	3	-	-	3	4
Pharmaceutical Toxicology	-	-	-	2	-	1	-	2	-	-	0	5
Pharmaceutical Microbiology	-	2	-	-	-	3	-	1	-	-	0	6
Total	5	7	7	12	4	17	4	16	-	1	20	53

Ph.D.: Doctor of Philosophy; M.Sc.: Master of Science.

TABLE 7: Doctorate and master studies that have been conducted between the years 2008-2012 at Erciyes University, Faculty of Pharmacy.

Year Department	2008		2009		2010		2011		2012		Total	
	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.
Analytical Chemistry	-	2	-	-	-	1	1	1	-	2	1	6
Biochemistry	-	2	-	2	-	1	-	1	-	2	0	8
Pharmaceutical Microbiology	-	-	-	2	-	3	-	2	-	-	0	7
Pharmaceutical Chemistry	-	1	-	2	-	-	-	-	-	-	0	3
Pharmacology	-	-	-	-	-	-	-	2	-	-	0	2
Total	-	5	-	6	-	5	1	6	-	4	1	26

Ph.D.: Doctor of Philosophy; M.Sc.: Master of Science.

TABLE 8: Doctorate and master studies that have been conducted between the years 2008-2012 at Gazi University, Faculty of Pharmacy.

Year Department	2008		2009		2010		2011		2012		Total	
	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.
Analytical Chemistry	1	-	-	7	-	2	1	2	-	1	2	12
Biochemistry	-	2	-	2	-	4	-	1	1	5	1	14
Pharmaceutical Chemistry	2	2	1	5	1	8	1	4	-	5	5	24
Pharmaceutical Technology	1	-	1	2	1	8	1	3	-	1	4	14
Pharmacognosy	-	9	-	12	-	10	2	11	-	6	2	48
Pharmacology	1	5	-	6	-	8	-	6	-	5	1	30
Pharmaceutical Toxicology	3	3	2	3	3	5	1	1	1	1	10	13
Pharmaceutical Microbiology	-	-	-	4	-	1	-	-	-	-	0	5
Total	8	21	4	41	5	46	6	28	2	24	25	160

Ph.D.: Doctor of Philosophy; M.Sc.: Master of Science.

demic year graduate education at Hacettepe University Health Science Institute began. In Table 9, quantitative data of graduate studies conducted at Hacettepe University, Faculty of Pharmacy in the period of 2008-2012, were given.

According to Table 9, between the years of 2008-2012 at Hacettepe University Faculty of Pharmacy totally 42 Ph.D. and 78 M.Sc. studies were conducted.

Inönü University, Faculty of Pharmacy was established in 2001, and at the 1992-1993 academic year graduate education at Inönü University Health Science Institute began. In Table 10, quan-

titative data of graduate studies conducted at Inönü University, Faculty of Pharmacy in the period of 2008-2012, were given.

According to Table 10, between the years of 2008-2012 at Inönü University Faculty of Pharmacy totally 13 M.Sc. studies were conducted.

Istanbul University, Faculty of Pharmacy was established in 1962, and at the 1982-1983 academic year graduate education at Istanbul University Health Science Institute began. In Table 11, quantitative data of graduate studies conducted at Istanbul University, Faculty of Pharmacy in the period of 2008-2012, were given.

TABLE 9: Doctorate and master studies that have been conducted between the years 2008-2012 at Hacettepe University, Faculty of Pharmacy.

Year Department	2008		2009		2010		2011		2012		Total	
	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.
Analytical Chemistry	4	-	-	3	2	1	-	-	2	-	8	4
Biochemistry	1	-	1	-	1	2	-	1	1	2	3	6
Pharmaceutical Chemistry	1	2	1	2	1	1	1	1	2	1	6	7
Radiopharmacy	-	-	-	1	2	-	-	2	-	2	2	5
Pharmacy Management and Law	-	-	-	1	-	1	-	1	-	-	0	3
Basic Pharmaceutical Sciences	-	1	-	1	-	1	-	-	-	-	0	3
Pharmaceutical Technology	1	3	1	4	1	12	-	5	1	2	4	26
Pharmaceutical Botany	-	-	-	-	1	3	-	-	-	-	1	3
Pharmacognosy	1	-	-	3	1	1	1	1	1	1	4	6
Pharmacology	1	1	2	7	2	2	-	-	-	-	5	10
Pharmaceutical Toxicology	-	-	4	1	2	-	1	1	2	1	9	3
Pharmaceutical Microbiology	-	1	-	1	-	-	-	-	-	-	0	2
Total	9	8	9	24	13	24	3	12	9	9	42	78

Ph.D.: Doctor of Philosophy; M.Sc.: Master of Science.

TABLE 10: Doctorate and master studies that have been conducted between the years 2008-2012 at Inönü University, Faculty of Pharmacy.

Year Department	2008		2009		2010		2011		2012		Total	
	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.
Analytical Chemistry	-	-	-	3	-	-	-	1	-	-	0	4
Biochemistry	-	-	-	1	-	1	-	1	-	-	0	3
Pharmaceutical Chemistry	-	-	-	-	-	1	-	1	-	1	0	3
Pharmaceutical Botany	-	-	-	-	-	1	-	-	-	-	0	1
Pharmacology	-	-	-	-	-	-	-	1	-	1	0	2
Total	-	-	-	4	-	3	-	4	-	2	0	13

Ph.D.: Doctor of Philosophy; M.Sc.: Master of Science.

According to Table 11, between the years of 2008-2012 at Istanbul University Faculty of Pharmacy totally 19 Ph.D. and 71 M.Sc. studies were conducted.

Marmara University, Faculty of Pharmacy was established in 1982, and at the 1982-1983 academic year graduate education at Marmara University Health Science Institute began. In Table 12, quantitative data of graduate studies conducted at Mar-

mara University, Faculty of Pharmacy in the period of 2008-2012, were given.

According to Table 12, between the years of 2008-2012 at Marmara University Faculty of Pharmacy totally 28 Ph.D. and 93 M.Sc. studies were conducted.

Mersin University, Faculty of Pharmacy was established in 2000, and at the 1999-2000 academic year graduate education at Mersin University

TABLE 11: Doctorate and master studies that have been conducted between the years 2008-2012 at Istanbul University, Faculty of Pharmacy.

Year Department	2008		2009		2010		2011		2012		Total	
	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.
Analytical Chemistry	1	1	-	1	-	3	2	2	1	-	4	7
Biochemistry	-	1	1	-	-	2	-	-	-	-	1	3
Pharmaceutical Chemistry	2	-	-	1	1	6	-	1	-	-	3	8
Pharmaceutical Technology	-	1	-	5	1	2	-	12	-	-	1	20
Pharmaceutical Botany	-	1	1	-	3	3	-	-	-	-	4	4
Pharmacognosy	-	-	-	3	-	3	2	5	-	-	2	11
Pharmacology	1	2	1	4	1	2	-	1	-	-	3	9
Pharmaceutical Toxicology	-	1	1	1	-	2	-	-	-	1	1	5
Pharmaceutical Microbiology	-	-	-	-	-	2	-	2	-	-	0	4
Total	4	7	4	15	6	25	4	23	1	1	19	71

Ph.D.: Doctor of Philosophy; M.Sc.: Master of Science.

TABLE 12: Doctorate and master studies that have been conducted between the years 2008-2012 at Marmara University, Faculty of Pharmacy.

Year Department	2008		2009		2010		2011		2012		Total	
	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.
Analytical Chemistry	-	-	-	1	-	1	-	2	2	4	2	8
Biochemistry	1	4	-	-	1	4	2	5	3	3	7	16
Pharmaceutical Chemistry	-	-	1	2	-	3	2	8	-	4	3	17
Basic Pharmaceutical Sciences	1	1	-	-	-	1	-	1	-	1	1	4
Clinical Pharmacy	-	1	-	6	-	4	-	5	-	2	0	18
Pharmaceutical Biotechnology	-	-	1	-	1	-	-	-	-	-	2	0
Pharmaceutical Technology	-	1	-	3	1	-	1	-	2	-	4	4
Pharmaceutical Botany	1	1	-	-	1	-	-	-	-	1	2	2
Pharmacognosy	-	-	-	1	-	-	-	2	-	-	0	3
Pharmacology	-	3	-	5	-	3	1	2	-	2	1	15
Pharmaceutical Toxicology	-	-	-	1	1	-	-	2	1	-	2	3
Pharmaceutical Microbiology	1	1	-	-	3	2	-	-	-	-	4	3
Total	4	12	2	19	8	18	6	27	8	17	28	93

Ph.D.: Doctor of Philosophy; M.Sc.: Master of Science.

Health Science Institute began. In Table 13, quantitative data of graduate studies conducted at Mersin University, Faculty of Pharmacy in the period of 2008-2012, were given.

According to Table 13, between the years of 2008-2012 at Mersin University Faculty of Pharmacy totally 3 Ph.D. and 19 M.Sc. studies were conducted.

Yeditepe University, Faculty of Pharmacy was established in 2001, and at the 1996-1997 academic year graduate education at Yeditepe University Health Science Institute began. In Table 14, quantitative data of graduate studies conducted at Yeditepe University, Faculty of Pharmacy in the period of 2008-2012, were given.

According to Table 14, between the years of 2008-2012 at Yeditepe University Faculty of Phar-

macy totally 1 Ph.D. and 23 M.Sc. studies were conducted.

DISCUSSION

Graduate education in pharmacy faculties, according to Higher Education Act (No. 2547) 65th article; is governed by the provisions of the regulation to be ready by "Regulation on Graduate Education" and "Graduate Education Institutes Organization and Operation Regulations" prepared by the Inter-University Council.

At Istanbul University in which pharmacy education began, Ph.D. studies in the field of pharmacy in the period of 1942-1983 were given in Table 15.

As can be seen from Table 15, in Analytical Chemistry 22 Ph.D., in General Chemistry 9 Ph.D.,

TABLE 13: Doctorate and master studies that have been conducted between the years 2008-2012 at Mersin University, Faculty of Pharmacy.

Year Department	2008		2009		2010		2011		2012		Total	
	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.
Analytical Chemistry	-	-	-	1	-	-	1	-	-	-	1	1
Biochemistry	-	2	-	1	-	-	-	-	-	1	0	4
Pharmaceutical Chemistry	-	2	-	2	-	1	-	1	-	1	0	7
Pharmacognosy	-	-	-	1	-	1	-	-	-	-	0	2
Pharmacology	-	-	1	1	1	1	-	-	-	-	2	2
Pharmaceutical Microbiology	-	1	-	-	-	2	-	-	-	-	0	3
Total	-	5	1	6	1	5	1	1	-	2	3	19

Ph.D.: Doctor of Philosophy; M.Sc.: Master of Science.

TABLE 14: Doctorate and master studies that have been conducted between the years 2008-2012 at Yeditepe University, Faculty of Pharmacy.

Year Department	2008		2009		2010		2011		2012		Total	
	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.
Pharmaceutical Chemistry	-	-	-	-	-	1	-	-	1	-	1	1
Pharmacy Management	-	-	-	-	-	1	-	2	-	2	0	5
Clinical Pharmacy	-	-	-	-	-	2	-	1	-	-	0	3
Pharmaceutical Technology	-	-	-	-	-	2	-	1	-	-	0	3
Cosmetology	-	-	-	-	-	-	-	3	-	5	0	8
Pharmacognosy	-	-	-	-	-	1	-	1	-	-	0	2
Pharmacology	-	-	-	-	-	-	-	-	-	1	0	1
Total	-	-	-	-	-	7	-	8	1	8	1	23

Ph.D.: Doctor of Philosophy; M.Sc.: Master of Science.

TABLE 15: Ph.D. studies at Istanbul University in the field of pharmacy in the period of 1942-1983.¹

	Analytical Chemistry	General Chemistry	Biochemistry	Pharmaceutical Botanic	Microbiology	Pharmaceutical Chemistry	Pharmacognosy	Pharmacology	Toxicology	Galenic Pharmacy
1942						1				
1943										1
1944						1				
1948										1
1949						1	1			2
1950						1				
1953						2				
1954										1
1955	1									1
1956	1						1			
1957						1				
1959							1			
1960						2				1
1961						1				
1963	1									
1964										1
1965							1			
1966	1					1				1
1967	1					2	1			2
1968	1					1				
1969	1					1				1
1970	3		1	2		1	2			2
1971		1			1					4
1972					1			1		3
1973	1			1			1	1		1
1974		1				1	1			1
1975	5	1	1	1		1	1		1	1
1976	1	2			1		1			1
1977								1		4
1978		1	1	1		6	1	1		1
1979	1		1	1		1	2			2
1980	2	1			1	2	1			1
1981			1				1		1	
1982	1	1		2		1	2			2
1983	1	1	1		1	1	1			1
Total	22	9	6	8	5	29	19	4	2	35

Permission was obtained from Emre Dölen.

TABLE 16: Pharmacy faculties' graduate programs and the number of students graduate from these programs in our country.³

Department	Anadolu Uni.		Ankara Uni.		Atatürk Uni.		Ege Uni.		Erciyes Uni.		Gazi Uni.		Hacettepe Uni.		İnönü Uni.		İstanbul Uni.		Marmara Uni.		Mersin Uni.		Total			
	P	M	P	M	P	M	P	M	P	M	P	M	P	M	P	M	P	M	P	M	P	M	P	M		
Analytical Chemistry	12	15	51	9	6	1	15	6	-	-	31	7	34	13	-	28	22	19	14	1	-	-	-	197	87	
Biochemistry	1	1	24	12	3	-	10	4	-	-	34	5	-	-	1	17	4	32	22	3	-	-	-	125	48	
Pharmacy Management	-	-	35	4	-	-	-	-	-	-	-	-	7	2	-	-	-	-	-	-	-	-	-	42	6	
Pharmacognosy	16	10	49	13	6	-	23	6	-	-	35	13	35	16	3	28	12	14	3	4	-	-	-	213	73	
Pharmacology	18	9	40	18	-	-	14	11	-	-	62	19	-	-	2	21	4	18	11	3	-	-	-	178	72	
Pharmaceutical Botany	2	-	5	5	-	-	10	4	-	-	-	-	5	-	-	14	3	8	-	-	-	-	-	44	12	
Pharmaceutical Microbiology	-	-	22	10	-	-	11	-	-	-	6	1	-	-	-	7	-	10	-	1	-	-	-	57	11	
Pharmaceutical Chemistry	19	7	23	10	1	-	21	9	-	-	50	12	43	25	-	25	13	26	11	-	-	-	-	207	89	
Pharmaceutical Technology	22	5	24	21	-	-	25	10	-	-	45	13	55	18	-	38	15	37	2	5	-	-	-	251	84	
Pharmaceutical Toxicology	3	1	41	10	-	-	10	2	-	-	49	15	23	14	-	7	4	12	5	-	-	-	-	146	49	
Food Analysis	-	-	-	-	-	-	-	-	-	-	35	-	-	-	-	-	-	-	-	-	-	-	-	-	35	-
Basic Pharmaceutical Sciences	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-	-	-	-	-	-	-	-	-	6	-
Drug Metabolism	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	3	-
General Chemistry	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	3	3	-	2	-	-	-	-	12	3
Clinic Pharmacy	-	-	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	31	3	-	-	-	-	-	44	3
Cosmetology	1	-	-	-	-	-	6	-	-	-	4	-	8	-	-	-	-	4	-	-	-	-	-	-	23	-
Medicinal Chemistry	-	-	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2
Pharmaceutical Biotechnology	-	-	-	-	1	-	2	-	-	-	-	-	10	2	-	-	-	5	-	-	-	-	-	-	18	2
Biopharmaceutical	-	-	-	-	-	-	-	-	-	-	-	-	10	2	-	-	-	-	-	-	-	-	-	-	10	2
Pharmacokinetic	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phytotherapy Drugs	-	-	-	-	-	-	-	-	-	-	11	-	-	-	-	-	-	-	-	-	-	-	-	-	11	-
Radiopharmacy	-	-	-	-	-	-	6	-	-	-	-	-	10	1	-	-	-	-	-	-	-	-	-	-	16	1
Total	94	48	314	114	17	17	153	52	0	0	362	82	246	93	6	192	80	222	71	19	0	0	0	1638	544	

P: Ph.D, M: M.Sc.

Permission was obtained from Gülbin Özçelikkay.

TABLE 17: Ph.D. and M.Sc. studies in the field of pharmacy in the period of 2008-2012 in our country.

Department	Anadolu Uni.		Ankara Uni.		Atatürk Uni.		Ege Uni.		Erciyes Uni.		Gazi Uni.		Hacettepe Uni.		İnönü Uni.		İstanbul Uni.		Marmara Uni.		Mersin Uni.		Yeditepe Uni.		Total	
	P	M	P	M	P	M	P	M	P	M	P	M	P	M	P	M	P	M	P	M	P	M	P	M	P	M
Analytical Chemistry	2	3	25	4	4	2	7	2	6	1	12	2	4	8	4	7	4	8	2	1	1	1	-	-	80	29
Biochemistry	2	-	5	-	5	-	2	1	8	-	14	1	6	3	3	3	1	16	7	4	-	-	-	-	68	13
Pharmacy Management	-	-	6	3	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	5	-	11	6
Pharmacognosy	11	1	18	4	3	2	5	4	-	-	48	2	6	4	-	11	2	3	-	2	-	2	-	-	109	19
Pharmacology	8	3	16	7	-	-	4	3	2	-	30	1	10	5	2	9	3	15	1	2	2	2	1	-	99	25
Pharmaceutical Botany	-	-	4	4	-	-	6	1	-	-	-	-	3	1	1	4	4	2	2	-	-	-	-	-	20	12
Pharmaceutical Microbiology	-	-	10	3	-	-	6	-	7	-	5	-	2	-	-	4	-	3	4	3	-	-	-	-	40	7
Pharmaceutical Chemistry	3	3	24	6	1	2	3	-	3	-	24	5	7	6	3	8	3	17	3	7	-	1	1	1	101	29
Pharmaceutical Technology	1	1	20	10	1	-	7	9	-	-	14	4	26	4	-	20	1	4	4	-	-	-	11	-	104	33
Pharmaceutical Toxicology	-	-	16	8	-	-	5	-	-	-	13	10	3	9	-	5	1	3	2	-	-	-	-	-	47	30
Clinic Pharmacy	-	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	-	-	-	-	3	-	26	-
Basic Pharmaceutical Sciences	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	4	1	-	-	-	-	-	7	1
Pharmaceutical Biotechnology	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	2	-
Biopharmaceutical	-	-	-	-	-	-	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	-
Pharmacokinetic	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Radiopharmacy	-	-	-	-	-	-	1	-	-	-	-	-	5	2	-	-	-	-	-	-	-	-	-	-	6	2
Total	27	11	149	49	14	6	53	20	26	1	160	25	78	42	13	0	71	19	93	28	19	3	23	1	725	208

P: Ph.D, M: M.Sc.

in Biochemistry 6 Ph.D., in Pharmaceutical Botanic 8 Ph.D., in Microbiology 5 Ph.D., in Pharmaceutical Chemistry 29 Ph.D., in Pharmacognosy 19 Ph.D., in Pharmacology 4 Ph.D., in Toxicology 2 Ph.D. and in Galenic Pharmacy 35 Ph.D., with a total of 139 Ph.D. were done in the period of 1942-1983 at Istanbul University.

The other study in this field was made by Özçelikay in 2009, in that study pharmacy faculties' graduate programs and the number of students who graduate from these programs were given in a table (Table 16).

As can be seen from Table 16, in Analytical Chemistry 197 M.Sc., 87 Ph.D.; in Biochemistry 125 M.Sc., 48 Ph.D.; in Pharmacy Management 42 M.Sc., 6 Ph.D.; in Pharmacognosy 213 M.Sc., 73 Ph.D.; in Pharmacology 178 M.Sc., 72 Ph.D.; in Pharmaceutical Botanic 44 M.Sc., 12 Ph.D.; in Pharmaceutical Microbiology 57 M.Sc., 11 Ph.D.; in Pharmaceutical Chemistry 207 M.Sc., 89 Ph.D.; in Pharmaceutical Technology 251 M.Sc., 84 Ph.D.; in Pharmaceutical Toxicology 146 M.Sc., 49 Ph.D.; in Food Analysis 35 M.Sc.; in Basic Pharmaceutical Sciences 6 M.Sc.; in Drug Metabolism 3 M.Sc.; in General Chemistry 12 M.Sc., 3 Ph.D., in Clinic Pharmacy 44 M.Sc., 3 Ph.D.; in Cosmetology 23 M.Sc.; in Medicinal Chemistry 1 M.Sc., 2 Ph.D.; in Pharmaceutical Biotechnology 18 M.Sc., 2 Ph.D.; in Biopharmaceutical

Pharmacokinetic 10 M.Sc., 2 Ph. D., in Phytotherapy Drugs 11 M.Sc. and in Radiopharmacy 16 M.Sc., 1 Ph.D. studies with a total of 1638 M.Sc. and 544 Ph.D. studies were done in the field of pharmacy from the establishment of institutes to March 2008 in our country.

In the Table 17, from the results of our study we gave total of graduate studies that were done in the period of 2008-2012 in the field of Pharmacy in our country.

As can be seen from Table 17, in Analytical Chemistry 80 M.Sc., 29 Ph.D.; in Biochemistry 68 M.Sc., 13 Ph.D.; in Pharmacy Management 11 M.Sc., 6 Ph.D.; in Pharmacognosy 109 M.Sc., 19 Ph.D.; in Pharmacology 99 M.Sc., 25 Ph.D.; in Pharmaceutical Botanic 20 M.Sc., 12 Ph.D.; in Pharmaceutical Microbiology 40 M.Sc., 7 Ph.D.; in Pharmaceutical Chemistry 101 M.Sc., 29 Ph.D.; in Pharmaceutical Technology 104 M.Sc., 33 Ph.D.; in Pharmaceutical Toxicology 47 M.Sc., 30 Ph.D.; in Clinic Pharmacy 26 M.Sc.; in Basic Pharmaceutical Sciences 7 M.Sc., 1 Ph.D.; in Pharmaceutical Biotechnology 2 Ph.D.; in Biopharmaceutical Pharmacokinetic 7 M.Sc. and in Radiopharmacy 6 M.Sc., 2 Ph.D. studies with a total of 725 M.Sc. and

208 Ph.D. studies were done in the field of pharmacy during the period of 2008-2012.

As a result, in the period between the establishments of institutions to 2012, total 2363 M.Sc. and 752 Ph.D. studies with a total of 3115 graduate studies were done.

Nowadays, the ongoing rapid advances in science and technology should make an increase at the number of graduate studies in the field of pharmacy. For this purpose, graduate training should be encouraging by the relevant legislation and regulations. Also, instead of increasing the number of faculty of pharmacy, the completion of the academic deficiencies in pharmacy faculties and efforts to escalate these faculties to graduate level should be the primary target.

The condition for opening M.Sc. program possession of three faculty members and for opening Ph.D. program possession of five faculty members, determined by the Council of Higher Education, avoid graduate education in some of the major branches of pharmacy. We think this obstacle could be overcome by increasing the number of academic staff in the field of pharmacy or with modifications in related regulation.

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