

PHARMACEUTICS

Chapter 1

History of Pharmacy Profession and Pharmacopoeia

- Pharmacy refers to the health care profession that deals with both fields of health science as well as chemistry
- It is defined as the profession of the art, science, and economics of discovery and preparation from natural and synthetic sources, drugs and non-drug material needed for the prevention, management and treatment of diseases in man and animals
- The word Pharmacy was coined from Greek word
- *Pharmakon* meaning *medicine* or *drug*

History of pharmacy

1. History of pharmacy with respect to Pharmacy education
2. History of pharmacy with respect to Pharmaceutics Industries

Education Regulation by

- PCI : Pharmacy council of India
- AICTE : All India council of Technical Education

History of pharmacy with respect to Pharmacy education

- **1860** : 1st Pharmacy course started in Madras medical college
- **1937** : 1st Degree level course in pharmacy started at Banaras Hindu University (BHU) (3 year degree course)
- **1940** : 1 year Master course (M Pharma) started at Banaras Hindu University (BHU)
- **1990** : B.V. Patel PERD Center (Pharmaceutics Education & Research Development Centre) established at Ahmedabad & The director was H.L Bhalla
- **1991** : National Institute of pharmaceutical Education and Research (NIPER) was established at Mohali With Dr. C.L. Kaul as the first Director

Courses

- ◆ D – Pharm (Diploma in pharmacy)
- ◆ B – Pharm (Bachelor of Pharmacy)
- ◆ M. Pharm (Master of Pharmacy)
- ◆ MS Pharm (Master of Science in Pharmacy)
- ◆ M – Tech (Master of Technology in Pharmacy)
- ◆ Pharm. D (Doctor of Pharmacy)
- ◆ PhD (Doctor of Philosophy in Pharmacy)

History of pharmacy with respect to Pharmaceutics Industries

- 19th Century Britishers used to import Allopathic Medicines from Germany & U.K
- 1901 Establish BCPW (Bengal Chemical and Pharmaceutical Works) in Calcutta by Acharya P.C Roy
- 1904 - 07 Establish four Research institutes
 - Haffkins Institute
 - King Institute
 - Central research Institute
 - Paster Institute
- 1930 First time BCPW started Producing Tetanus Antitoxin
- 1939 - 13% Medical requirement met by India rest by imports
- During Independence { 1947 } Production of Galenicals , Simple Formulation & Few vaccines
- Post Independence { 1948 } Govt. of india launched a five year plan
- 1954 Establish “ Hindustan Antibiotic LTD “

Act in Pharmacy

- Patent Act
- DPCO Act (Drug price control act)
- FERA Act (Foreign establish Regulation act)

Amendments in Patent Act

1. 1995 1st Amendments in Patent Act
2. 1999 2nd Amendments in Patent Act
3. 2004 3rd Amendments in Patent Act
4. 2015 4th Amendments in Patent Act

Amendments in DPCO (Drug Price Control Act)

1. 1955 1st Amendments in DPCO Act
2. 2013 2nd Amendments in DPCO Act

Amendments in FERA Act (Foreign Establish Regulation ACT)

1. 1993 1st Amendments in FERA Act
2. 1999 Abolish / Closed
3. 2004 FEMA (Foreign Established Management Act) is Established

Pharmacy as a Career

Pharmacist

- Hospital Pharmacist
- Community Pharmacist
- Clinical Pharmacist

Industries Production

- Quality Control
- Quality Assurance
- Research & Development
- Marketing Representative (MR)

Hospital

- Medical Writer
- Medical Coder
- Medical Adviser
- Medical Claim Association

Academic Lectures

- ✚ Assent Professor
- ✚ Associated Professor
- ✚ Professor

Other

- ◆ Bioinformatics
- ◆ Clinical research coordinator
- ◆ Pharmacovigilance

Pharmacopoeia

The term pharmacopoeia comes from Greek Word

Pharmakon means ***Drug***

Poiein means ***Make***

- It can be defined as any recipe or formula that standard required for making or preparing a drug
- It is also known as Compendia

Indian Pharmacopoeia (I.P.)

- Indian Pharmacopoeia is an official document meant for overall quality control and assurance of pharmaceutical product marketed in India by way of contributing to their safety & affordability.
- The Indian Pharmacopoeia is published by the Indian Pharmacopoeia Commission (IPC) on the behalf of the Ministry of Health and Family Welfare, Government of India.
- The Indian Pharmacopoeia is being produced to fulfil the requirement in the Drug & Cosmetics Rules, 1945 of standard of drugs produced in India

Editions of Indian Pharmacopoeia

| S.No.of Edition | Year of Publication | Year of Addendum Released |
|-----------------|---------------------|---------------------------|
| First | 1955 | 1960 |
| Second | 1966 | 1975 |
| Third | 1985 | 1989,1991 |
| Fourth | 1996 | 2000,2002,2005 |
| Fifth | 2007 | 2008 |
| Sixth | 2010 | 2012 |
| Seventh | 2014 | 2015 |
| Eighth | 2018 | 2019 |

Sailent Features of I.P. 6th Edition

- ✚ It contains 3 volumes which are hard bound.
- ✚ It contains a total of 1918 monographs out of which 287 were newly added.
- ✚ Categorisation, dosage, and available strength of dose for the drug were also added.
- ✚ Traditional tests were replaced with more specific tests, such as IR and UV spectrophotometry.
- ✚ Application of chromatography is done extensively.
- ✚ Monographs related to herbal drugs are also added.
- ✚ It also contains many monographs which are not present in any other major Pharmacopoeias globally.
- ✚ It also contains a certificate to prove its authenticity.
- ✚ The format is quite simple and easy to understand.

Sailent Features of I.P. 7th Edition

- ❖ A total of 2548 monographs were added.
- ❖ This edition also contains 577 new monographs.
- ❖ 19 monographs and one general chapter were added related to radiopharmaceuticals.
- ❖ The edition comprises of 4 volumes which are in hard bound, along with a DVD.
- ❖ Monographs related to veterinary are considered to be vital portion of this edition.
- ❖ Use of chromatographic methods is extensively mentioned.
- ❖ Traditional tests were replaced with more specific tests, such as IR and UV spectrophotometry.
- ❖ Monographs which were irrelevant were eliminated.
- ❖ Many monographs related to herbs were added.
- ❖ It also contains a certificate to prove its authenticity.
- ❖ The format is quite easy and simple to understand.

Sailent Features of I.P. 8th Edition

- IP-2018, comprises of 4 Volumes, having 220 new monographs that are as follows
- 170 chemical monographs
- 15 herbal monographs
- 10 blood and blood related products
- 02 vaccines and immunosera for human monographs use
- 03 radiopharmaceutical monographs:

- 06 biotechnology derived therapeutic products
- 14 veterinary monographs
- It also contains 366 revised monographs and 7 omissions.

British pharmacopoeia (B.P.)

- ★ The british pharmacopoeia is published annually & comprises of the standard required for maintaining the quality of medical substance of United Kingdom (U.K)
- ★ In 1864, the 1st Edition of B.P. was Published

| Edition | Year | Edition | Year |
|------------------|------|------------------|------|
| 1 st | 1864 | 11 th | 1980 |
| 2 nd | 1874 | 12 th | 1993 |
| 3 rd | 1885 | 13 th | 2007 |
| 4 th | 1898 | 14 th | 2008 |
| 5 th | 1914 | 15 th | 2010 |
| 6 th | 1932 | 16 th | 2013 |
| 7 th | 1948 | 17 th | 2014 |
| 8 th | 1953 | 18 th | 2016 |
| 9 th | 1958 | 19 th | 2018 |
| 10 th | 1963 | 20 th | 2020 |
| | | 21 st | 2021 |

United State Pharmacopoeia (U.S.P)

- ◆ The united state pharmacopoeia is a pharmacopoeia for the united states published annually by the United States Pharmacopoeial Convention.

| Edition | Year |
|------------------|-----------|
| 1 st | 1820 |
| 9 th | 1905 |
| 22 nd | 1990 |
| USP 37 NF 32 | 2013-2014 |
| USP 39 NF 34 | 2016 |
| USP 43 NF 38 | 2020 |

Extra Pharmacopoeia [Martindale]

- A Pharmacist, William Martindale in 1883 edited, compiled, and published the extra pharmacopoeia to provide updated information regarding drugs as well as galenicals to pharmacist & physicians.
- Pharmacopoeia [I.P , B.P , etc] does not contain & explanatory notes but only large amount of information .
- One should be aware of journal notices & appendices Maintain in pharmacopoeia.
- The extra Pharmacopoeia was included in B.P & four edition of martindale published in 3 years it has been 37 times & contain almost all the updated information about drugs & medicines

| Edition | Year |
|---------|------|
| 1 st | 1933 |
| 23rd | 1955 |
| 24th | 1958 |
| 25th | 1967 |
| 26th | 1972 |
| 40th | 2011 |



THANK YOU