

HISTORY OF DRUGS WITH SPECIAL REFERENCE TO INDIAN CONTRIBUTION

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ABSTRACT

The Knowledge of drugs is as old as man himself. The methods used by him to find remedies against different ailments rested to a great extent on Psychological effects and certain simple procedures like blood letting and cupping. However, attempts were also made to obtain efficient cure by drugs mainly by the vegetable and to some degree from animal and mineral kingdoms. Thus, on the basis of the historical evidences it can be said that, the history of drugs is spread over a long period and also the contribution made by the Indian physicians in this regard is not less than that of the physicians of other countries.

The Knowledge of drugs is as old as man himself. From the dawn of civilization man has tried to find remedies against different ailments or diseases. The methods used rested, to a great extent, on psychological effects and certain simple procedures like blood letting and cupping. However, attempts were also made to obtain efficient cure by drugs mainly by the vegetables and, to some de-

gree, from animal and mineral kingdoms. Historical data shows that the drugs which are used in today's world were already prevalent in ancient times. The Babylonians, Egyptians, Greek, Romans, Chinese and Indians developed their own materia medica, a subject providing description of herbal and chemical drugs, their empirical use and dosage.

To know the history of drugs, we have to trace the history of pharmacology which is derived from two Greek words "pharmakon and "Logos" meaning drugs and science respectively. It was used by Homer for a drug.

The pharmacological concept began when man used first a plant extract to relieve the symptoms of a disease. He must have learnt from his instinct that, some plants have the properties of curing the ailments. Most of the historians also agree with the statement that "neither empiricism nor magic stand at the beginning of the internal employment of remedies by men but the animal function, the instinct".

Babylo-Assyrian Materia Medica

Our knowledge of early medicine in Babylonia and Assyria is very fragmentary. They were the heirs of a Sumerian civilization. Their therapeutics was tinged with religious rituals centring about water.

R. Campbell Thompson who examined in the British Museum many

hundreds of the clay tablets originating from the library of king Assurbanipal of Assyria, has mentioned 250 vegetable drugs and 120 mineral drugs. In some instances, the drugs are listed in special groups, as drugs for heart ailments.

Many of the minerals which were known and used by the Assyrians are also mentioned by the Greek Dioscorides in his famous book on materia medica (the first century after Christ)

Egyptian and Greco-Roman Materia Medica

Most of our Knowledge of ancient Egyptian therapeutics is obtained from Ebers' papyrus which was written about 1550 B.C. and discovered at Thebes in 1872 by George Moritz Ebers (1837-1898). It consists of 110 columns, each of 20-22 lines. It contains more than 811 prescriptions and more than 700 drugs from the mineral, vegetable and animal kingdoms.

On the whole, the Ebers papyrus shows that Egyptian medicine reached a high level. Undoubtedly it had a

great influence on Greek medicine to which we now proceed.

Early Greek therapeusis was a version of Egyptian herbal polypharmacy, modified by indigenous belief of magical nature. The mythologic creator of the Greek materia medica was Apollo. In the hierarchy of the Greeks, herbal medicine ultimately became closely identified with Chiron the Centaur. With the growth of temple medicine, the physicians at the Asclepiea introduced more and more simples. Hippocrates, the Father of Medicine, (460-355 B.C.) a contemporary of Socrates considered the healing power of nature to be the most important aid in disease and thought that drugs could, at most assist the natural forces. Though he knew many drugs from old Egypt and Greece, he seems to have used them sparingly; he laid emphasis on general hygienic measures (diet, fresh air, bath, exercise). Nothing essentially new was added to materia medica¹.

After the time of Hippocrates there was a group of people who was

expert in the medicinal plants. This group known as 'rhizotomoi' (derived from Greek word rizoma meaning the mass of roots in Greek therapy).

The rhizotomoi collected the indigenous vegetable roots and sold them. They often practised medicine. The most important representative of these rhizotomoi was Dioscles of Carystos (Fourth Century B.C.). He is considered to be the source of all Greek pharmacologic treatises from Theophrastus to Dioscorides.

Theophrastus (372-285 B.C.) who was friend and pupil of Aristotle, collected all the botanical knowledge of his period in two treatises viz " On the History of Plants " and " On the Causes of Plants ". From these works it is clear that much more was known about drugs in the time of Hippocrates than would appear in the writings of that physician.

Theophrastus described about 500 drugs. He was the first to mention mistletoe which, according

1. Readings in Pharmacology, Page 8.

to him, was spread by birds. He included a description of madder and pointed to its diuretic and analgesic properties. Celsus (25 B.C.-50 A.D.) was an important encyclopaedist. He has dealt in the first book of his work " De medicina " with drugs many of which have found a place in modern pharmacopoeia. He laid more emphasis on careful dietary management but his best medicament is food opportunely given.

A class work on medicines was written at the beginning of our era by Pedanius Dioscorides of Anazarba in Cilicia. He was a Greek physician in the service of Nero (54-68 A.D.).

The work was translated between the years 1652 and 1655 by the great botanist of Petersfield, John Goodyer. He wrote out the entire Greek text with an interlinear English translation on 4540 quarto pages. It was preserved for centuries in Magdalen College, Oxford and first printed in 1934 by R.T. Gunther who included many illustrations made by Byzantine¹. However, German translation had appeared

in 1902. Dioscorides " De materia medica libri quinque " consists of five books in which the author has given careful description of over 900 drugs. Some new drugs were added such as certain copper and lead preparations and burned chalk which were used for either itching or astringent effects. The description of the drugs and the preparations obtained from them are accompanied by recommendations for special ailments or diseases.

The contents of the five books are arranged as follows:

Book 1: Aromatics, oils, ointments, trees

Book 2: Living creature, milk and dairy products, cereals and sharp herbs.

Book 3: Roots, Juices, herbs

Book 4: Herbs and roots

Book 5: Vines and wines, metallic ores

A sixth book "De venenis" about poisons and antidotes was written later. Considering the paramount role which the work has played for many centuries, it seems appropriate

ate to quote a few examples to give a general idea of the work and its scope we have selected six descriptions: the first shows the well known effects (abortion) of the oil from *Funiperus sabina* L, the next three illustrate the superstitious belief in certain animal preparations, whereas the fifth gives a good description of opium and action. The last one (mandrake) tells about the combined use of alcohol and an extract of mandrake in order to prepare a patient for operation. Its use was not restricted to induce sleep and abolish pain but this drug was considered as a general panacea also against snake bite, tumours etc.. In bracket the references to Dioscorides are given.

(1.104) *Brathus*. *Funiperus sabina* (1) Var. *Cupressifolia* (2) Var. *tamariscifolia*

(II.3) *Hippokampos*. *Sygnathus Hippocampus*. Sea horse.

(II.40) *pneumon choircos*. Lungs of swine, Lamb or Bear.

·(IV.65) *Mekon Agrios* and *Emeros*. *Papener somniferum*, Opium poppy.

(IV.76) *Mandragoras*. *Atropa mandrogosa*, Mandrake.

Several pages are devoted to bile, blood, drugs and urine from a large number of animals which are used for many different purposes.

Pliny the Elder (23-79 A.D.) is also considered to be a good writer having passion for collecting and compiling the entire scientific work of his time. His work is of immense value because most of the books which he used --he himself speaks of more than 2000- are lost. Pliny's "Naturalis Historia" (Natural History) originally contained 160 books but only 37 have come down to us. Pliny devoted books XX-XXVII of this work to remedies derived from plants and trees.

Aretaeus of Cappadocia (Fl. 2-3rd century) was the author of a medical text of which only fragments have come down to us. Examination of these fragments reveals a rational use of the *materia medica*. Aretaeus, like Hippocrates, believed in the efficacy of dietary

regimen. One of the most famous examples of this tendency is in his treatment of phthisis, in which he prescribed milk.

Contemporary with Aretaeus was Galen (130-200 A.D.) Born in Pergamum in Asia Minor. He performed a great deal of his work as physician in Rome. He was a very prolific writer, being the author of about 400 works covering all parts of medicine.

In his works he has mentioned numerous drugs and the methods of their use. He is credited with some 30 books on the subjects. He advised that "in order to know drugs, inspect them not once or twice but frequently"¹. In addition to the drugs which he himself collected, he tells us, "Drugs are thus sent to me from Syria, Palestine, Egypt, Cappadocia, Pontus, Macedonia, Spain, Gaul, and Africa"².

Arabian Materia Medica : The decline and fall of the Roman Empire was accompanied by a lowering of level of medical standard. The cultural centre became first transferred to the Byzantine Empire and then to the Arabs. Though

Byzantine Empire existed until 1453 A.D., its prominent position in medicine only lasted until about 700 A.D. The leadership was then taken over by the expanding Arabian caliphate. The height of their work in medicine was reached with the great Persians Rhazes (865-925) and Ibn Sina (980-1037) and several others. Like other great Arabians, Rhazes was a prolific writer and he is said to have written over two hundred books on various subjects. But his works are dwarfed by his vast compilation, "Kitab al-Hawi", He has dealt in the 20th and 21st volumes of Al-Hawi with simple drugs.

Some more books written by him exclusively on materia medica are about 18 in number. Probably the most important pharmacologic contribution attributed to him is the introduction of mercurial ointments, and copper sulphate for external application. He is also known as the first to use emetics in the treatment of poisonous foods and drinks. He also advises not to use purgatives, and prefers regulation of diet.

1. Galen visits the Dead Sea and the Copper mines Cyprus 25 : 99, Quoted by Mettler, Lecilia see page 184.

2. Ibid, page 99, Quoted by Mettler, page 184

Ibn-Sina wrote an encyclopaedic work " Al-Qanun-fi-al-Tibb" in five books and devoted the second book to *simplicia*, the simple drugs and the fifth to the *Composita*, the compounded remedies. These books are to a great extent based on the work of *Discorides*. The number of simple drugs mentioned by Ibn Sina in the Canon is 665.

The famous "Arabians" of persian origin who wrote on medical and pharmaceutical subjects were followed by individuals born in Spain.

The work of Ibn-Baitar (born in Malaga 1197 and died in Damascus 1248) contains the most comprehensive list of drugs. He mentions in his "Kitab-al-Jami-Fi- Mufradat al-Advia" (Comprehensive Book on simple Drugs) 145 drugs of mineral origin, 130 drugs from the animal kingdom and about 1800 drugs from the vegetables realm. George Sarton writes¹ :

"It (the Kitab al-Jami) is not only a very methodical and critical compilation, but it contains also a good number of personal observations. It does not deal with drugs

but also with various species of food..... Practically the whole of *Dioscorides* and of *Galen's* knowledge on the subject was incorporated in the *Jami*, but many other authors were quoted, some 150 in all among whom were twenty Greeks"

Another work on *materia medica* is known as *Kitab al-Mughni fi-al-Adviya al-Mufrada*.

Shaykh Dawud of Antakia (Antioch) wrote a book on medicine entitled "Tadhkirat al-Albab" which is commonly known as *Tadhkirah Dawud Antaki*. It was written about 1008 A.D. It describes a number of herbs including drugs of animal and mineral kingdoms.

Abu al-Farj Ibn al-Quff, the pupil of Ibn Abi Usaybiah wrote books on medicine, besides the commentary of *Al-Qanun fi-Al-Tibb* in 6 Volumes. His work "kitab al-Umdah fi -al-Jarahat" consists twenty sections of which eleventh one describes 212 drugs which are generally used in surgical cases, while the 20th deals with salves, ointments and oils used in wounds.

1. Introduction to the History of Science, Vol .2, Page 663.

Indian contribution**(a) Ayurvedic Materia Medica**

The materia medica of ancient India may be traced from Vedas, written about 5000 years ago. The main sources of information during the Vedic period are Rig Veda and Atharva Veda. The former contains passages in praise of the healing powers of herbs and water, while the latter describes some highly efficacious drugs. The residing of physicians in cottages surrounded by gardens full of herbs and medicinal plants shows that a sort of materia medica must have existed in those days.

In the history of Indian medicine Charaka and Sushruta are known as highest authorities. Charaka gives fifty groups of ten herbs each, which are sufficient for an ordinary physician. (Cha. Sut. chap.4) Sushruta subdivided his materia medica in 37 parts according to the diseases which the remedies are to combat. Among seven hundred sixty herbs mentioned by him are : aconite, aloes, calamus, cannabis, cassia,

cassia fistula, crocus, curcuma, kamala, ricinus...

His mineral drugs included alum, arsenic acid, borax, cinnabaris, quick-silver and zinc oxide, Further more a number of animal drugs were listed such as cantharides, moschus, flesh of vipers and various fats and excrements¹.

He describes in his work 'Sushruta Samhita' the localities where particular herbs or, more properly, simples were to be found and mentions the opportune time to collect them. The Hindus appear to have been especially interested in poisons, apharodisiacs and antidotes for the bites and stings of various animals. The material in the Sushruta Samhita was probably derived from the Greeks².

Beside classical works of Charaka and Sushruta, some other works exists. The oldest Nighantu appears to be the Dhanvantari Nighantu in which about 400 herbs have been described. Bhava Mishra, native of Banaras compiled a treatise on medicine known as Bhavapra-kash

1. History of Pharmacy, Page 11.

2. History of Medicine, Page 177.

in which 600 drugs have been mentioned. Lala Shaligram, a native of Moradabad has described in his book 'Shaligram Nighantu' 1574 drugs illustrating some by drawings.

(b) Unani Materia Medica : The Greek materia medica was transmitted to India in 12th century A.D. It continued to grow under the kind patronage of different rulers in India. After reaching India the physicians made use of some of the best and most effective Indian drugs, and incorporated them in their pharmacopoea. To begin with, the Hakims settled in Punjab, Delhi and Sind along with the conquerers. Thus it started taking roots in this country from the time of Alauddin Khilji (1290-1321 A.D.).

Diya Mohammad Masud Rashid Zangi, a courtier of Sultan Mohammad Tughlaq (d.1351) wrote a book Majmu-i-Diyai in Persian in 1336 A.D. during his stay in Tilang (Dawlatabad), It gives the clear picture of the state of medicine in the Indian subcontinent. It deals with the Unani drugs along with the Ayurvedic drugs and treatment. It

is not published so far. One copy of the Ms is extant in the Central library of Jamia Hamdard, New Delhi.

Zayn al-Din Ali (Jamal -al -Din) al-Hussain al-Ansari known as Haji Zayn al-Attar, a descendent of Abdullah Ansari was born in 730/1329 at Shiraz. For sixteen years he had been in constant service of Sultan Shah Shuja (reigned : 1364-84) died in 806/ 1403-4. In addition to other works, he wrote a book on materia medica entitled Miftah al-Khazain, completed in 1366 and divided into three maqalahs (i) on simple medicament, in alphabetical order (ii) on exchanging and improving them, likewise in alphabetical order (iii) on compound medicaments in twelve babs (chapters). This book was further revised and entitled as Ikhtiyarat-Badie completed in 770/1368-9, dedicated to an unidentified princess Malikah Badi al-Jamal and divided into two maqalahs (i) on simple medicaments in alphabetical order (ii) on compound medicaments in sixteen babs (chapters). Mir Mohammad Momin 'Ikhtiyarat Qutb Shahi' is explanation and critique on Ikhtiyarat Badii and also

describes the views of the investigator and original sources of drugs. Hakim Mir Mohammad Hussain wrote comprehensive treatise on materia medica. His famous work is *Makhzan al- Advia* in persian, translated into Urdu also. It includes about 1500 drugs. Most of them are grown in India. *Tuhfah al-Mominin* is written on the margin of the work.

Another book written on Indian herbs is known as *Tadhkirat al- Hind* by Raza Ali Khan of Deccan who lived about 150 years ago. He mentions Deccan or Sanskrit names of some herbs and describes them according to his own experience and observation.

After the Sultanate period, the Mughal ruled over India, most of the Mughal rulers were patrons of knowledge. They encouraged the Unani medicine which spread throughout the greater part of India.

The first and foremost Tabib of the period of the Mughal Emperor Babur (1526-1530 A.D.) who wrote a number of valuable treatises on medicine is known as Yusuf al- Harwi. He was the native of Herat and came to India in 1526 A.D. with his

father Mohammad b. Yusuf Harwi and was appointed the chief physician of the Emperor. The best work of the Hakim on drugs is *Riyad al- Advia* written in 1540, described in alphabetical order and dedicated to Humayun. Its manuscripts are extant in Khuda Baksh library, (Patna) Asiatic Society (Bengal), Maulana Azad library (Aligarh), Salar Jung Museum (Hyderabad) and also British Museum.

During the reign of Akbar (1526-1606 A.D.) Hakim Ayn al-Mulk Shirazi (Dawai) devoted a work to drugs named as *Fawaid al- Insan*, written in 1595 A.D. The simple drugs have been mentioned in alphabetical order.

Another Hakim of the same period, Muzaffar b. Mohammad al- Hussaini al- Shifai (d. 1628 A.D.) compiled a pharmacopoeia *Shifa al-Atil* which has been described in the books of history with different names like *Qarabadin Shifai*, *Qarabad-in Muzaffari* etc.

During Jahangir's reign (1605-1628 A.D.) Hakim Amanullah Khan wrote '*Ganj Bad Award*' which is, in

fact an encyclopaedia of Unani drugs. The writer has referred to 105 books of Arabic, Persian and Sanskrit languages.

Hakim Nizamuddin Gilani (b. 1586) of Shahjahan's period (1628-1658) was also a man of letters. His work "Khawass al-Advia" is on the action and properties of simple drugs. A copy of the Ms is in the State Central library of Hyderabad. Now probably shifted to Andhra Pradesh Oriental Manuscripts Library and Research Institute. Another Hakim of the same period who wrote a voluminous book on drugs known as Alfaz al-Advia is Hakim Nural-Din Mohammad Abdullah, born at Agra. It is on simple and compound drugs arranged in alphabetical order, composed in 1628 A.D. and dedicated to Shahjahan.

Hakim Najmul Ghani Khan, son of Hakim Azam Khan's sister wrote a voluminous book Khazinat al-Advia in 1915. Although it is based on

Muheet-e-Azam, it supplements some of its omissions. It describes 2612 drugs.

Another worth physician is Hakim Mohammad Sharif Khan (1725-1807 A.D.) who wrote (i) Talif-e-Sharifi which deals with the actions and properties of Indian drugs and foods (ii) 'Ilaj al-Amrad, a pharmacopoeia which consists of compound prescriptions according to diseases. It was published in 1879.

Its English translation from the Persian original was published from Calcutta in 1833 with the title 'Indian Materia Medica.

Conclusion

Whatever has been described in the foregoing pages shows that the history of drugs is spread over a long period. In this regard the contribution made by the Indian physicians is not less than that of the physicians of other countries.

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सारांश

औषधियों का इतिहास विशेषतः भारतीय योगदान के संदर्भ में

— हकीम अब्दुल हमीद

औषधियों का ज्ञान उतना ही प्राचीन है। जितना कि स्वयं मनुष्य का इतिहास प्राचीन है। विभिन्न व्याधियों के विरुद्ध उपचारों की खोज में उसके द्वारा प्रयुक्त उपाय बड़ी हद तक शरीर पर पड़नेवाले प्रभावों तथा कुछ साधारण प्रक्रियाओं पर आधारित थे। तथापि मुख्यतः वानस्पतिक औषधियों द्वारा और कुछ सीमा तक प्राणिज एवं खनिज औषधियों द्वारा स्वास्थ्य प्राप्ति हेतु प्रभावशाली प्रयास किये गये। इस दिशा में भारतीय चिकित्सकों का योगदान इतरदेशों के चिकित्सकों से किसी भी तरह से कम नहीं है।