

PHARMACY AND MEDICINE EDUCATION IN ANCIENT EGYPT

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ABSTRACT

The ancient Egyptians knew many of the therapeutical effects of the medicinal plants. This knowledge was taught at home from father to son. So, these houses formed the first primitive pharmacy and medicine schools. Century after century, the ancient Egyptians became more and more interested in medical sciences. Temples began to establish medical and pharmaceutical schools. Priests of good and honest character with scientific background were chosen to become teachers and professors in these schools. Another medical and pharmaceutical schools teaching all the scientific courses were the Per Ankh or Houses of Life. Special schools were erected inside the Royal palaces for the education of the Royal family children, the nobles and the court officials comprising all sorts of sciences and arts, specially taught in its own Per Ankh, as in Heliopolis and Memphis palaces.

In the pre-dynastic periods, the ancient Egyptians knew many of the therapeutical effects of the medicinal plants. This knowledge was taught at home from father to son and was kept secretly in certain families, who became very famous in curing the sick people with herbs, minerals, parts of animals together with the help of spiritual incantations and amulets. So, these houses formed the first primitive pharmacy and medicine schools, in which the sons were taught the art of mixing and preparing of different pharmaceutical

preparations, together with writing and reading.

When writing and reading became available to many people, round 5000 B.C., these physician herbalists began to write down all what they knew of sciences in sheets of papyrus, comprising all the pharmaceutical preparations, their methods of uses and their curative effects and the type of diseases each of these remedies can be used for cure. Copies of these sheets were handed over to the priests of the Heliopolis temple,

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who hung them round the columns and on the walls of the temple, so as the visiting sick people could consult them about their diseases and benefit from these informations. By time, the temple became so crowded with sick people who considered it as a pilgrimage place.

Also, many students came to learn from these sheets about the beneficial uses of the herbs and the different diagnostic methods, and get use of these informations in their future career of medicine and pharmacy.

The priests collected these bits of medico-pharmaceutical informations and were collectively named "the book of Ember" or "the Holy Book". It was often referred to as being a gift of God Thot and so it came to be the basis of the medical text books and convinced the commons that it was of devine origin and unchangeable.

This book of Ember was soon monopolised by the temple priests who kept it very secretly hidden. Century after century, the ancient Egyptians became more and more interested in medical sciences, and forced the priests to simplify the contents and informations of this book so as to be more handy to all temples.

These temples began to establish medical and pharmaceutical schools

within its campus, specially in the major capitals of the provinces of Egypt, and their teachers were specialised priests with scientific background, and began teaching all kind of sciences. Priests of good and honest characters were chosen to become teachers and professors in these schools, and were obliged to wear a coarse uniform cloths made of linen in the form of a long dress, and covering their backs with leopard skin and walk with shaven scalp so as to be recognised every where.

The students who wish to be educated in these schools were chosen to be least talkative persons, with plenty of courage, great patience, being circumcized as a sign of purity, and must have obtained a previous priliminary religious education in a temple, for fear of getting mixed up with bad-mannered comrades.

Also, if one of these students committed a dishonourable mistake, that deeply affects his belonging to his supreme institute, received a severe punishment, either imprisonment or hanged. This constituted an example for those students wishing to continue their studies in those schools, that they have to keep their purity, good manners and excellent conduct, due to the strong belief that pharmacists and physicians were honest messengers from God for the sake of preserving the life of the people.

The education and studying in these institutes was for a limited number of years. First, the students get a primary education of the basic principles of sciences, then the intelligent students were chosen by their professors so as to proceed in higher courses and so on. When they have finished this stage with success, and pass their final examinations, then the officials of these institutes celebrate this occasion by holding a graduation ceremony, in the most holy and sacred place of the temple. There, the professors and the Government's high officials attend and the graduates swear an oath on medical and pharmaceutical ethics, which can be briefed in their promise by the divine God that they will keep in utmost secrecy, all the sciences they were taught so as to prevent them from falling into the hands of evil commons, and that they should do all their best to serve the society's welfare and must be sympathetic with the poor patients and must not reveal any of the patient's secrets.. etc. This oath was copied literally by Hippocrates, and all the medical graduates in ancient Greece were made to swear it before starting their professional career, and this custom is still in function throughout the whole world. The original Pharaonic Oath was found written in Hearst Papyrus. The newly medical and pharmaceutical graduates were obliged to begin their practice by forcibly joining for a certain time,

in the service of the temples they have graduated from, by treating the poor sick people who come asking for help, all free of charge, before they could start their private career.

Many out-patient clinics were erected, attached to the medical schools in all the temples, together with in-patient wards for the cure and treatment of the sick and operable patients.

Also a big pharmacy was erected joining these clinics for the preparation of all the necessary needed pharmaceuticals for the use of the patients. Each temple was supplied with the medicinal plants for the preparation of the different pharmaceutical forms, from the annexed botanical garden, which were controlled by experienced pharmacists, equipped with laboratories following scientific rules of that time. The collection of these valuable medicinal plants were done under strict supervision of guards who were priests in origin.

The wealthy families sent their children to be educated and study writing, reading, medicine, pharmacy ...etc. in these temples specially the famous ones.

The oldest and most famous temple-institute in ancient Egypt was that one in the city of Annu (Heliopolis) (now a superb, north of

Cairo), and was considered a sacred city for the worship of the one and only God Ra. This temple was very famous all over the known world to be the highest cultural centre ever built, and students from all Egypt and the neighbouring countries came and joined it for higher education in all sciences. This temple-university was most probably erected before 4000 B.C. This temple-university, together with its famous school for herbalists, was highly appreciated for its highest standard of education. Its medical school in the first two years gave general medical knowledge, while in the following years, specialised sections for every branch of medicine accepted students wishing to specialise in a certain branch, such as internal medicine, ophthalmology, dermatology, surgery, dentistry...etc.

The pharmacy school used to educate the students, the art of preparing drugs and pharmaceuticals from herbal, mineral or animal sources, with special attention to the ways of cultivation, propagation, preservation...etc. of the various medicinal plants.

Many of the ancient Greek students came to study and learn in this temple, such as Hippocrates, Pythagoras, Galen, Adox, Solon, Plato, Cornelius, Celsus, Serapion (150 A.D.), Democritus (400 A.D.), Epicurus and many others, not to forget the very famous Greek physi-

cian Asclepius in the 11th century B.C. Also Hecataeus of Miletus (Malta) in 520 B.C., Hecataeus of Abdera in 300 B.C., Aristophanus, Pliny, Xenophon, Tacitus and many other Greek and Roman scientists and philosophers. (Also Eudoxus in 395 A.D.).

Another famous temple university was built in Memphis, south of Cairo, during the period of the Old Kingdom (2800 B.C.), when Memphis became the unified capital of Egypt (in 3200 B.C.). This temple harboured the famous school of pharmacy, and another for medicine. This latter school graduated the famous physician Imhotep, which later on, became one of its professors and director of the temple-institute, and on his death, it was called Imhotep temple. Also contained a very famous library.

Also, in the temple of Memphis (Sakkara today), there existed a special temple for the treatment of psychological diseases, based on music and the help of some sedative herbal preparations.

A third famous temple-institute was that of Sais (now called Sa Al-Hagar), which was 60 km. south of the present-day Alexandria, and became celebrated everywhere. Ebers Papyrus mentioned that its writer was graduated from both Heliopolis and Sais temples, as a sign and proof of his great skill in medical

profession, (this papyrus was considered as the text-book for drug classification in every branch and every human organ). Also a famous School of Midwifery was attached to the Sais temple.

Strabon mentioned that the city of Heliopolis was the source of the ancient Egyptian religion and the centre of the school which taught theology, philosophy, medicine, pharmacy...etc. When King Ptolemios I ruled over Egypt in 320 B C, he transferred by force most of the celebrated professors and scientists from the Heliopolis temple and annexed them to the Mauseion in Alexandria, which he made it the capital of Egypt.

The existence of special pharmacy schools since the early days of ancient Egypt, prior to the dynastic era, could not therefore be denied at all, based on all the historical evidences which were found in the medical papyri and from the works of ancient historians.

Another medical and pharmaceutical schools, teaching all the scientific courses, built during the various dynastic periods, were the Per Ankh or Houses of Life. These were exclusive for the education of children of the Royal family and of pharmacists and physicians serving in the royal court. These Per Ankh were distributed in the major capitals of the Egyptian kingdoms.

Every House of Life contained a division which was called "House of Drugs" or Pharmacy Institute, and was dedicated for the education of pharmacy sciences. It necessitated the study of medicinal herbs, chemicals, minerals, animal products. A big botanical garden was annexed, with all the known medicinal herbs cultivated, with ware-houses for its storage. Many laboratories were found for the preparation of all known pharmaceutical preparations.

In the Per Ankh, pharmacy and medicine were taught through books explaining them in drawings and sketches, with the use of Hieroglyphic and the more simplified Hieratic writings. Later on, with the diminished use of the Egyptian language during the Ptolemaic and Roman periods, these houses of life stuck strongly to this language and became its protector, hence this was called the writing of the house of life.

These houses were usually situated inside the temples, but sometimes they were built outside them. They comprised many studying halls and rooms with a big library and a statue of the God Thot, the God of science and knowledge. Also, these houses contained operating rooms for surgery, and adjacent clinics for the dentists.

Each Per Ankh was composed of a number of schools for the education

of pharmacy, medicine, chemistry, engineering..etc, together with theological religious studies. When Thebes became the capital of Egypt in the New Kingdom, it was famous by being the city of sciences and culture, due to the presence of this house of life.

Those students who wished to learn medical and pharmaceutical sciences in Per Ankh, were obliged to pass a series of hard examinations after completing their primary general education. If they pass these tests, they gain admittance and begin studying theology and other religious sciences for two more years, at the end of which, they have to pass another examination. Then they start studying pharmacy or medicine for 4-5 years. When they pass the final examination, they were honoured in a big celebration and swear the graduation oath before practising their profession.

In late Pharaonic periods, there existed a very famous pharmaceutical school in the city of Sais (Sa Al-Hagar), which remained active, carrying the torch of science till it was ruined during a revolution and reconstructed by orders of the Persian invaders of Egypt, (c. 4th century B.C.). During the New Kingdom, Thebes became the centre for the worship of the God Amon (Amen to the Greeks), and the houses of life became strictly linked to Amon temples all over Egypt.

Many of the kings of early dynasties of ancient Egypt were very interested in medicine, pharmacy, surgery, anatomy..etc. King Athothis, the 2nd Pharaoh of the 1st dynasty (c. 3160 B.C.) was a physician and wrote valuable books on drugs and anatomy, King Ozaphais (c. 3100 B.C.) made a tremendous development in the science of arteries, King Setnis 5th king of the 2nd dynasty made many modifications in the medical text-books, King Tosarthoros 2nd king of the 3rd dynasty was very skilled in medicaments and his books were dealt with great appreciation till the end of the 1st century A.D., King Senda of the Old Kingdom, was a genius physician. King Narmer (1st dynasty) grew many poisonous medicinal plants. All these books and many others were copied and recopied hundred of times with continuous modernisation and developments throughout whole of the Pharaonic periods, and were taught in all pharmacy and medical schools, while the original volumes were kept hidden in great secrecy in Imhotep temple in Memphis and Heliopolis temple. Many of the Greek students came to these temples and copied all what they have found of sciences, with previous permission of the high priest, and took them back on their return home, where they used it in their schools. The management of the temple was a great honour and was exclusive to the Royal family members. During

the Old Kingdom, the eldest prince was chosen as the chief priest. While during the Middle Empire, certain families monopolised this position by heredity. The chief judges were in the same time, the chief priests of the Goddess Maet of justice, while the surgeons were the priests of the Goddess Sekhmet.

Every temple was considered as a small community, with employees policemen, prisons, craftsmen .etc, all working for the temple and living day and night inside, but were not priests. The highly scientific board was composed of 12 persons, and their duties were to perform religious ceremonies day and night. Women enchanters were very essential in every temple, singing during the religious ceremonies and used to work by day only then leave for their homes at night. Some of them were living permanently in the temple under the supervision of a woman directress called the sacred wife of the God. The priests were sons of priests and usually started their religious education at the age of five. They were taught Hieroglyphic grammar and writing, memorise the names of dieties and their pictures together with their origin, religious stories and festivals, then have to pass an examination at the end. It is worth noting that all religious ceremonies were performed in the darkest place of the temple and the most sacred place, without the presence of the people.

Other religious education comprised memorising of sacred books and its rituals, together with civil education, because they might chose to work in Governmental departments or in the Royal palace (where they must know the religious songs to be performed there).

Important temples of the Old Kingdom constructed in Upper Egypt were; in Keft city (for the worship of God Maen, comprising many educational halls and a big library), in Aswan, Esna, Toud, Edfu (all for the worship of God Khnoum), in Abydos (which was a sacred city before the dynastic periods because it was the burial site for all their kings and for the worship of God Osiris, and many Egyptians used to pay pilgrimage to his temple), the Ramessium temple and its famous house of life, Hapo temple, Nefertari temple, Ehnasia temple with a school for the education of the Royal family members as well as the Governor's children, also in Assiut and Thebes. King Akhnaton built his capital Akhetaton (now Tel Al-Amarna), a great temple with its house of life, with several huge divisions and other small ones, with halls for lecturing (Auditoria) and a big library.

Other famous temple-universities during the Pharaonic periods were founded in Upper Egypt as in Philae, Khonsu temple in Karnak (Thebes), Thot temple in Hormopolis, Temples

of Nit, Nekhbet, Ptah, Maen in Panopolis, in Edfu, and the very celebrated one of Isis in Coptos city ..etc.

EDUCATION INSIDE THE ROYAL PALACES :

- 1- During the Old Kingdom; Special schools were erected inside the Royal palaces for the education of the Royal family children, the nobles and the court officials, both religious and civil types, comprising also all sorts of sciences and arts, specially taught in its own Per Ankh, as in Heliopolis and Memphis palaces. The graduates were granted the title of "Royal Scribe" and of "God Scribe".
- 2- During the Middle Empire; The Royal palaces comprised special schools for the Royal family members' children and its graduates were called "Children of the education Suite". The schools were composed of an interior division which was the important part, headed by a director, while the exterior part was occupied by the employees, clerks, secretaries and guards.
- 3- During the New Empire; New collective boarding schools were erected and were situated in most of the provinces' capitals which replaced the Royal palace school, and was accepting as its students,

those pupils from the Royal family, higher officials and many Asian Kings' children. Also many art schools were established for teaching sculpture, painting ..etc.

The Royal palace's schools were full of teachers, of highest professional training, directed with a senior philosopher. Also, there was a special school for the education of the female children of the Royal family, with a special system of education and professors.

Female education was encouraged throughout all the Pharaonic periods, specially among the princesses and females of the court's high officials, and some of them became chief of the God Amon priestesses and wives of the high chief priests.

SCIENTIFIC LIBRARIES : (PER MEZ)

Attached to each of the major temples, which were distributed throughout Egypt during all the Dynastic periods, were a huge scientific library, containing all volumes on every branch of knowledge, such as medicine, pharmacy, chemistry, astronomy, ..etc, in the form of huge papyrus rolls, which were used by all professors and students of different schools of the institute in their education. Such libraries were in Heliopolis temple, Ptah temple, Edfu temple ..etc. Also there were wall paintings (Fresco) and writings on many of the temple walls showing

the various successful ways of treatment and formulae.

Also there were numerous papyri in these libraries, each bearing the name of a medicinal plant or drug for the preparation of medicaments.

Every library had its own staff of scribes, inspectors, directors ..etc. Some libraries were exclusive for religious sciences while others for scientific ones.

Some of these libraries were very famous such as those attached to the temples of Heliopolis, Memphis, Abydos, Bobastēs, Tannis, Thebes, Ramessium (situated in the main hall of 8 huge pillars), Edfu, Philae ..etc.

All the papyri were kept under strong supervision of well trained pharmacists. These medicaments were prepared in special laboratories within the campus of the temples and dispensed through the in-patient and out-patient clinics.

These pharmacists were also assigned to prepare many expensive perfumes for the exclusive use in holy places of the temples in special festivals.

The ancient Egyptian pharmacists used to prepare standard medicaments according to certain formulae written in prescription forms on papyrus sheets which were suspended on the

temple, walls and columns near the physicians' quarters, so as they can copy from these sheets and prescribe them for treatment of the sick people.

Each hospital had specialised laboratories for the mixing of drugs, preparing mixtures and extracts and straining them through clean sieves made of linen. They used only boiling water in their preparation, while wine, beer, milk, oils, honey ..etc. were currently used in specific proportions. Laxatives were prepared with great care from decoctions of different medicinal herbs. Pills were prepared with skill as well as topical ointments ..etc.

The medical prescriptions of the ancient Egyptians do not differ greatly from the present ones which are used all over the world, thanks to the glorious heritage of the Egyptians. These prescriptions used to contain names of the ingredients, with no mention of their proportions (for the sake of secrecy) but bears the patient's name and certain symbols, through which, the pharmacists were able to prepare them according to this code, known only between them and the physicians.

Every big hospital contained a special research division annexed to it, in which both pharmacists and physicians could get all the available help they required during their daily practice, in order to solve any problem

they faced, through its highly qualified research professors. After the problem had been solved, the pharmacist incharge files it separately, so as to be easily found whenever a similar case needed solving. Through this fantastic way, each generation added valuable scientific informations to be used by the next one, all for the benefit of Egypt.

These exquisite research text-

books, were kept separately in completely safe boxes, dipped in holes on the walls of the libraries of the temple-institutes. Many of these boxes dating to the period of the Old Kingdom, were found to contain several written papyrus rolls, with full scientific informations on nearly all known sciences, thus showing how keen the ancient Egyptians were in preserving all sorts of knowledge and culture as hard as they could.

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सारांश

प्राचीन मिस्र में औषधनिर्माण तथा चिकित्सा विज्ञान शिक्षण

— समीर याह्या अल गम्माल

प्राचीन मिस्रियों को अनेकों वानस्पतिक द्रव्यों के चिकित्सा संबन्धी गुण-धर्मों का ज्ञान था। यह ज्ञान पिता द्वारा अपने पुत्र को घर में दिया जाता था। इस प्रकार यह घर प्रथम आदिकालीन औषधालय तथा चिकित्सा विज्ञान के शिक्षा केन्द्र बने। समय के साथ-साथ प्राचीन मिस्रियों में चिकित्सा-विज्ञान के विषय में रुचि बढ़ती गई। मन्दिरों द्वारा चिकित्सा-विज्ञानीय एवं भेषज-विज्ञानीय शिक्षा केन्द्रों की स्थापना होने लगी। वैज्ञानिक पृष्ठभूमि के साथ-साथ अच्छे और ईमानदार चरित्र वाले पुरोहितों को इन शिक्षा केन्द्रों में शिक्षकों एवं आचार्यों के रूप में चुना गया। अन्य चिकित्सा-विज्ञानीय एवं भेषज-विज्ञानीय विद्यालयों को 'पर अख' अथवा आयुगृह कहा जाता था, जहाँ पर सभी वैज्ञानिक पाठ्यक्रमों को पढ़ाया जाता था। राजप्रसादों में राजवंश के बच्चों, सामंतों तथा राजदरवारी अधिकारियों को सभी प्रकार की वैज्ञानिक शिक्षाओं व कलाओं की शिक्षा देने के लिये विशेष विद्यालयों की भी स्थापना की गई थी।