

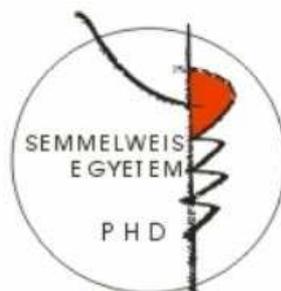
The „collected book of remedies for removing the diseases in the belly” in the Papyrus Ebers.

Magic and ratio in the choice of the *materia medica* at the beginning of the 18th Dynasty

PhD Dissertation

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I. Purpose of research subject

The research of the general tendencies of the ancient Egyptian medication together with the research of its special parts, **contribute greatly not only to the more accurate knowledge of the ancient Egyptian medicine**, but can also **give many important clues to the development of the European medical history, especially concerning its formation**. The influences started on the Greek and Roman medical works and continued through the medieval and renaissance medical theories and practices, by the development and continuation of the classical medical traditions, or by the Arab works also containing many longevity ancient Egyptian experiences.

Although the various sources concerning ancient Egyptian medicine attest to a wide-spread know-how of curing practice, the extant texts speak about the medical activities of the persons acting on a scientific level and belonging to the frame of the organised medical educational system, thus they are the *sunw* doctors, the priests of Sakhmet and the wizards (“*people of the amulets*”). All these different healing professionals worked on influencing the divinities, who caused all the diseases according to their opinion and on the physical treatment of the problems, but the proportion of the two operations applied by the various practitioners could be very different indeed.

In this study, the pharmaceutical field is concerned with the help of the text written down in the first “*collected book*” of the papyrus Ebers which originates from the beginning of the 18th Dynasty. It is divided into more than 20 simple books, and reflects typically the professional knowledge concerning the medical materials of its period, in its 20 meter length scroll.

The study will, however, be done on a wider range than usual – the *materia medica* will be **approached from lexicographical, biochemical and religious-historical points of view**. Its comprehensive,

comparative and coherent research is very deficient both in Hungarian and international literature.

The aims of the present dissertation can be summarised as follows:

1. The presentation and research of the *materia medica* used in the first “collected book” of the papyrus Ebers.

I wanted to study the field of the ancient Egyptian medicine which they called the *khet* (*ht*), and which is usually translated by „belly, body or the front part of the torso”. I analyse in the dissertation not the treatment of this body part, but the composition of the remedies prescribed for its treatment in the first *compendium* of the papyrus Ebers, during the reign of the pharaoh Amenhotep I (1525-1504 BC). In this way my work concentrates on the evaluation of the applied materials. I aim to do it with multilateral analysis asserting the points of views of several disciplines. I present elements with the help of which the ancient Egyptian medicine reached such a high level that it became an outstanding and exemplary model for the contemporaneous neighbours and later it became a foundation the modern medicine through the transmission and development of the Greco-Roman and Arab medicine.

2. The situation of the *materia medica* in the source and in ancient Egyptian medicine.

By the presentation of the materials used for the treatment of the various diseases of the *khet* I want to show the ancient Egyptian antecedents for the medical researchers of later periods. For this reason I also presented the general characters and the structure of the above compendium in the papyrus Ebers. In this section I investigate the way of connecting the various units, their structure, the textual characteristics, and analyse information obtained.

3. The manifestation of the rational and magical characters of the applied and identified materials.

I want to draw attention to the attitude ancient Egyptians followed in their medical practice: the irrational or magical and the rational or material views are combined inseparably in both the pharmaceutical and iatromagical treatments. The same principle was applied to the ancient choice of the healing materials which dispose effective substances and theological, that is, magical or mythical connotations.

My other aim is to demonstrate the close connection between the two fields (practical knowledge and theological background) also in texts which are usually said to be typically rational, such as the prescriptions, or their parts dealing with the *materia medica*. This situation can be explained by the ancient Egyptian conception, that the remedies could only be really effective if the dual effect acted in parallel.

4. The relation of the rational and magical views to each other in the choice of the *materia medica*.

The use of the two different views at the same time raise the question of priority: the magical reasons were of crucial importance, as used to be said concerning the animal materials, or rather the empirical experience lead ancient Egyptian specialists in the choice of the *materia medica*, as thought in the case of plant materials. Another question is, if the two view points are manifested differently for the choice of the various drug types, or there was a generally accepted method for the selection.

5. The classification of the various materials according to the way and aim of application, evaluation of their significance.

I want to check the possibility of the actual presence of the physical effects of the various materials – expected by the ancient Egyptians, based on the analysis of their prescriptions. Accordingly, I collected the medical effects and chemical components of several drugs based on the published literature of clinical experiments and laboratory examinations. I also want to reveal the contemporaneous theological connotations of the same materials and their role in the selections of the given material.

6. The general analysis and evaluation of the plant, animal and mineral materials.

I think it is important to collect the use of the given *materia medica* in other fields of life at that time: their role in every day life, in cultic and funeral worlds, especially in earlier periods of ancient Egyptian history. I hope to gain insight this way in the understanding of the development of the concepts of their medical and/or pharmaceutical properties and their iatromagical application.

7. The presentation of values and possibilities inherent in the ancient Egyptian *materia medica*.

I also want to stress that a better understanding of ancient Egyptian culture is as interesting and important for historians, religion-historians or curious people, as for medical historians. The thorough knowledge of this field will not only satisfy their appetite for curiosities, but also can provide much information for today's people and could even influence the formation of future health conceptions. With my results, however, I want to contribute primarily to the future pharmacodynamical researches concerning ancient Egypt, and give examples of possible healing materials for later pharmaceutical researches in modern medical culture.

II. Short description of how the investigation was done and the methodology

1. The base of the dissertation is **the hieroglyphic and hieratic publications of the papyrus Ebers**, which were completed by the publications of the various scholarly works in the fields mentioned above.
2. For the collection and evaluation of the information needed, and the completion of the dissertation, the personal research experiences

developed during the study of the literature, the participation in international conferences, and conversation with other researchers, were used.

3. The „*collected book*” for the *khet* in the Ebers papyrus was analysed for **its structure, and characteristics of its units and their relationship to each other.**

4. The various **medical text types of the period** were determined, presented and analysed.

5. **The raw materials** of the ancient Egyptian medicine were **systematized** based on their functions shown in the prescriptions, so that it could be possible to deduce which treatment was expected to be truly effective by the help of the given *materia medica*. **The frequency of the applications, and the amount and the parts used for the medicaments** were also studied.

6. All the medical raw materials were **investigated from both laboratory experiments’ and ancient Egyptian mythological and theological points of view.** Egyptologists started namely to observe in the last years that the use of rational and magical components are not necessarily divided in ancient Egyptian prescriptions. Some drugs can fit into both categories at the same time.

7. For the research-history section **the Hungarian and international literature** was studied and analysed.

8. **The types of sources and activities used for the dissertation:**

- analysis of original, ancient Egyptian texts
- etymological analysis with the help of ancient Egyptian dictionaries
- research in libraries with specialised literature
- study of data basis on the internet

9. The study of the „*collected book of the khet*” which includes almost

half of the 20 meter long papyrus Ebers is done from **pharmaceutical point of view**, concentrating on the raw material.

10. **Comparative analyses** are given for the utilisation and effectiveness of *materia medica* applied for the different fields of ancient medication, and also for the conceptions connected.

11. An important point is in the dissertation for medical researches that, with the ancient examples, **the attention is drawn to several important opportunities for modern medicine.**

III. Short summary of scientific results

1. The ancient use of the “collected book” analysed.

Until now the compendium was not dealt with as **a separate unit in the papyrus Ebers**, its inner structure and materials were not investigated in relation to each other.

1.1 It is clearly demonstrated by the structural overview that the compendium was **collected from various older “collected books”**. Several thematical books whose titles had been by this time forgotten were melded into newer versions. Thus the prescriptions used in them were still in use during the beginning of the reign of Amenhotep I., but **their history reached back already at that time for several generations.**

1.2. **Their language was**, however, **clear**, as they did not need any comments.

1.3. I deduced from the substance and the structure of the papyrus that **its use can be connected with great probability to one of the *swnw* in the high hierarchy of the residence.**

1.4. The scroll was probably used **by several physicians** based on the corrections in the text and the use of various paints, eventually for the medication of the pharaoh and its environment. Its excellent state of preservation suggests, however, a short time in use.

2. General features of the “*collected book*”.

Based on the investigation of the text, **the role of the *swnw***, i.e. “*physician*” manifested in a new side: the base of their work turned out to be built on **a mixture of magical and rational elements in the choice of the drugs** which are declared in earlier modern literature unambiguously either as typically rational or characteristically magical elements.

2.1. I interpreted the concept of disease by the determinatives used by the ancient Egyptians for their classification, and demonstrated on the example of the *whdw*-pain, which is often compared to the Greek *perittomé*, the **dual disease-conception of the ancient Egyptians**, its presumed connection between the physical symptoms and the divine activity, and the **double sequence in medical treatment and the conception of the diseases**.

2.2. When analysing the various types of medical texts present in the “*collected book*”, beside the generally accepted types, as prescription, case-study, prognosis, I demonstrated the presence of the **herbarium** during the New Kingdom, and also raised the **possibility of coming into being the bestiarium** at that time. I also proved the existence of the **pathological comment** during the New Kingdom, which seems to be a new development. There are very few texts extant which are telling *expressis verbis*, how the ancient Egyptians thought the interior processes happened. This is the reason why it is so important for the research that the two prescriptions Eb102 = Eb296 are far from each other, but in the same compendium.

2.3. I presented the concept of the *ht* and *mtw* in detail from anatomical point of view, emphasised the **changes in the medical interpretation of the two types of heart** conception in ancient Egyptian culture, and also wrote about its **religious significance**.

3. The rational characters of the *materia medica* applied

The *materia medica* used in ancient Egypt can be divided into two categories: **raw materials found in the nature and those achieved by a process**. We know many unidentified or uncertainly identified materials. As I consider the knowledge of both the rational and irrational base of application to be important, I investigated the materials identified so far by researchers.

3.1. I listed among the processed materials of the prescriptions those, which were **used in the shape of ware produced by any manufacturing or domestic procedure**. These are the various types of pastries, first of all bread, cake, gruel and pulpy food, drinks, among them those pressed from plants, cooked, condensed or fermented liquors, but the industrial products too, as various types of oil, papyrus scroll or faience powder, which also found their way into the *materia medica*.

3.2. After working through the literature and investigating the probable effects of the *materia medica* found in the ancient Egyptian prescriptions, I realised that **they contain effective substances indeed proven by modern instrumental examinations and experiments done in laboratories**. Thus their medical properties can be explained with medical arguments.

3.3. In this “*collected book*” the prescriptions contained herbal material very frequently: more than 90 species. I have chosen some characteristic ones based on frequency or specificity. The research included the following plants: *bnr*/date, *nbs*/Christ’s thorn, *jnhmn*/pomegranate,

jšd/Balanites, *w^cn*/juniper, *w^ch*/tiger nut, *nht*/sycamore, *hm3jt*/fenugreek, *šndt*/acacia, *tpnn*/caraway, *dgm* and *k3k3*/castor oil, and *d3rt*/carob. The specific effects expected at that time can usually be detected in various degrees or rendered probable by the chemicals found in them in the laboratories.

3.4. Also the animal drugs are varied in the „*collected book*” for the *khet*, but their number is lower. It is interesting because, according to the general medical-historical concept, for the treatment of the less visible diseases Egyptians needed more magical help, and the animal organs and the other animal derivatives, as blood, faeces, urine, hair, etc. are usually classified in this category. The **most popular in this book were the inner parts of the cattle** (meat, liver, intestines, marrow and bile), most of which were also eaten. Edible parts of other animals are named too (brain of bird and fish, bird hearts, muscles). More fantastic issues were frequently used from some other animals (donkey, sow, tom-cat, birds, fish, and even turtle and frog), as tusk, shell, secretion, pus and faeces. Thus **the majority of these drugs seem to be rather effective or general restorative / roborant substance**, but the accuracy of effect and the special substances need further investigations.

3.5. **An extraordinarily frequently and widely used remedy was honey** – found in almost a third of all the prescriptions analysed. There is barely any complaint or alteration where it was not used. It is considered one of the earliest ancient Egyptian remedies, with reason as it contains several healing properties which even nowadays is benefited by the apitherapy. Its effect was eventually increased by the propolis because honey was at that time not as accurately separated as today.

3.6. The amount of minerals used in this section is also small, with **most of the types present belonging to rare drugs** and without known meaning. Well known is, however, the **frequent use of salt, natron and various types of ochre**. Less frequently used in the treatments of the *khet* are galena and malachite which are, however, usually among the

basic medical accessories. The minerals **contain substances with healing properties**, thus their application has medical reason, too.

3.7. Surprisingly **the only human product in this book is mother's milk**, as the animal and human final products are thought to belong to the earliest basic drugs used for medication.

3.8. The **bread and other pastries** mostly made of cereals were probably the carrying and filling materials of the *materia medica* which made the remedy easily edible, and attractive. Their proteins, carbohydrates, fibres glutons and the various mineral substances make them **a nutriment with great value**, thus they had significant role in the metabolism processes.

3.9. Among the drinks I dealt with the **beer and wine**, because they are the most frequent *materia medica* in this category. Their application seems to have double reason: on the one hand they are **carrying materials** which insured the moisture content of the remedy, on the other hand the beer supplied vitamins E, H and various B vitamins together the mineral components, which increase the intestinal activity and the diuresis and are general roboratives. The antioxidants of red wine hinders the development of the diseases of the heart and the blood system, while its poliphenols and the resveratrol widen the veins, and the mineral constituents and vitamins **display further positive effects on the organism**.

3.10. The many **sorts of oils dissolve the lipotropic vitamins** making possible their **absorbtion**. As they originate **from plants and animals**, their active ingredients are naturally present in the remedies.

3.11. The presence of the rational effects is in many cases not surprising. Several of these materials were used by the Western medicine in the 19th century organotherapy, as applied by today's phytotherapy or by modern medicine and other health branches. Thus **their application** on the field of healing **has been continued in one way or another**. The

rational medical epithet of the papyrus Ebers is due mostly to these materials.

4. The magical characters of the *material media* applied

During my investigation I also studied the religious background of the same materials to be able to analyse their magical / theological significance.

4.1. **The results of this investigation were also shown on** the same characteristic and identified materials, **a selection of more than 30 types**, as every single drug could not be investigated in the frame of this work. Moreover, in the case of the unidentified drugs, their modern checking in clinical analysis cannot be done.

4.2. Parts of the plants **played also an important role in the mythology**, as for instance, the sycamore, *Balanites* or date but also the other herbal material **has some connection to the divine world** and through this situation they could intermediate with the divine power.

4.3. The same phenomenon can be observed more vigorously with **all the animals**, as in the investigated part of the scroll they all **had mythological or other religious connotations, analogical or word magic could be deduced**. Examples for the last phenomena are in the case of the bird of passage and the ascaria, the case of the opening of the shell and the respiration, or in the case of the *jdw* animal and the flying ability.

4.4. The **applied minerals** were again studied, and I could demonstrate that the often used ones **carried considerable religious significance**, while the rarely listed minerals are less known in religious literature. It seems thus to be probable, that their application might be associated with specific healing power. As many of them are still unidentified, their comparative study is impossible for the moment.

4.5. The ***materia medica* in the form of processed ware** could also induce success over rational limits, because they again **had religious connotations**. Especially the effects of beer, wine and oils were thought to be outstanding.

4.6. If we review the ancient Egyptian theological systems and the mythological relations, an interesting conclusion can be deduced, namely that **there are in the prescriptions practically always some theological connections**, not only the ubiquitous colour symbolism or the magical system of the similarities in shapes. The connection to gods fits exemplarily to the contemporaneous disease concepts: ancient Egyptians attributed the appearance of all diseases to the gods. Consequently healing could be expected also from them after, of course, the physician's appropriate practical activities.

5. The amount of the *materia media* applied

As demonstrated, the quantitative distribution of the *materia medica* in the texts and its designation are not merely a measuring process and its simple depiction respectively.

5.1. **The mythological background associated to the measuring units was considered to be an important factor in the effect displayed by the remedy.** According to the papyrus Hearst, it was also **linked to the treatment of the *ht*, but in the divine world**. The way of writing the numbers show the generalisation of the iatromagical significance of the theology around the Isis-Horus myths. The medical theoretical base of this view was that the various diseases took place in the *ht* of the patients, thus the basic activity of the healing process is the expulsion of the disease from this body member. The act happened **by the help of the wedjat eye**, which protected the Horus child and was his eye at the same time. Thus, the amount transmitted the power of this instrument.

5.2. This theology was certainly **widely accepted by the physicians applying the quantitative prescriptions with different amount of *materia medica***. To decide, however, in which degree the same theory prevailed among the quantitative prescriptions with the same amount of *materia medica* and in the prescription in register shape, further researches are needed.

6. Summary conclusions

6.1. It became obvious by the way of formulation of the prescriptions in the “*collected book*” of the papyrus Ebers, and by the material applied for the medical treatments, that the medical science in ancient was **characterised by the common use of rational and magical practices** at the beginning of the rule of the pharaoh Amenhotep I during the 18th Dynasty of New Kingdom. Philological, etymological, semantical, religio-historical and efficiency studies support this view.

6.2. I determined in the dissertation the reasons chosen by ancient Egyptian physicians for deciding the compounds of the prescriptions by the analysis of a close unit in the papyrus Ebers. They thought the diseases developed under physical and religious factors. I discovered that they **treated the two factors parallel in their therapy**. I strove to demonstrate that **rational arguments can be found for the choice of the magical elements**, and that **the typically rational-looking materials possess theological values, too**.

6.3. The present research also proves that the ancient Egyptian physicians **mastered extremely developed empirical and theological disease conceptions**, and they **were trained in serious theoretical and practical education** before they started the praxis.

6.4. Their scientific theories were **based on ancient roots**, but **new observations** were also introduced.

6.5. The treatments were thus **built up on scientific systems** in which **theology and experience were harmonized**, and on the base of which physicians **systematized their observations, interpreted and explained them**.

6.6. In case the above statements are generally proven, which seems to be very probable, as the other medical papyri have the same system and standards, and the materials named there are in most part identical, then this fact can be taken as a **basis for research in the ancient Egyptian medical-history**. With the parallel evaluation of the two systems, groups can be established in which all the available material at that time for the cure of a given disease are collected on rational base. After their filtering through the diverse theological systems, the subgroups will point to the circles of gods, and the comparison to that time medical arrangements with the help of the thematical books in the papyrus will point to theological schools, where the **professional education took place**. This way the **medical schools** can be fixed.

6.7. The research of the close relationship between the theology and practical medicine will hopefully make possible – in spite of the overlapping – the recognition and topographical location of the most important medical schools. This way **a more elaborate picture can be gained about the development of the medical knowledge** in the different historical periods and about the fate of these schools.

6.8. This research therefore does not stop at this point. One of the next tasks is **to prove the possibilities in general**. Another one is to **clear up many details in the technical process of producing the remedy** in ancient Egypt, as they could significantly influence the effectiveness and efficiency of the given remedy. Another task concerns the **interaction of the carrying and effective substances**. These complex investigations need the joint work of several specialists. Naturally it is impossible for one person alone to carry out all of them. Similar is the situation of the **irrational background**. The ancient field of the healing magic, applied

psychology and sometimes even psychiatry in the modern sense, can only be truly learned by the reconstruction of the complicated theological systems, and by the methods applied in medication in the given periods as completely as possible.

6.9. Several new pieces of information are included in the dissertation which can bring new results in case they are further studied. They give a firm base for **starting the pharmacological research of each prescriptions**, reconstructing in this way the ancient Egyptian pharmacy.

6.10. I hope the investigations can also contribute in solving some actual medical problems by the **ancient Egyptian *materia medica* as a starting point for new or newly introduced researches in the effectiveness of various drugs**, and this way they help in the recovery from diseases.

6.11. The study of the trends in ancient Egyptian medicine and its fields furthers not only **a better understanding of its history**, but also **improves our knowledge concerning the development of the European medicine**. Greek and Roman physicians visited Egypt to be acquainted with its culture and adopted several elements which continued to thrive in the practical or theoretical medical solutions of the Middle Ages and Renaissance. Again, an important amount of information was embedded into the Arabic works which later found their way into Western academic medicine.

6.12. Finally, the topic raises again religio-historical questions by bringing nearer **the mechanism of ancient Egyptian magic working in every day life and among its practitioners**. The method opens up new ways in the research of the history of science: it gives the opportunity to study the interaction of the theological schools and the scientific life based on practical knowledge.

IV. Publications related to present work

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Book about medical history:

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16. Gyóry H.: On a topos about medicine in Archaic Egypt. in: A Delta-man in Yebu, Occasional Volume of the Egystologist's Electronic Forum, No. 1. USA 2003, 215-224.

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18. Gyóry H.: Veränderungen im Kult des Harpokrates – Harpokrates mit Topf. in: D. Budde, S. Sandri, U. Verhoeven, Hgg., Kindgötter im Ägypten der griechisch-römischen Zeit. Zeugnisse aus Stadt und Tempel als Spiegel des interkulturellen Kontakts, OLA 128, Leuven 2003, 165-194.

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