Aegyptus et Pannonia VIII.

Acta Symposii anno 2021

BUDAPEST

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Editor: Hedvig Győry

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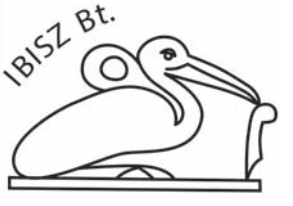

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“Plants for Health from Ancient Egypt to Present Day” Conference and the HEFS AEC

Dr. Hedvig Győry PhD
HEFT AEC president

After the realization of the 2019 mummy conference, the need arose to discuss the new trends, methodologies and achievements in ancient materia medica from a phytotherapeutic point of view and to disseminate the results achieved by our in-depth research. With this conference, we also wanted to explore how many different ways there are to approach ancient plants and medicine, also from historical, cultural, religious, ethnographic and pharmacological points of view, and to compare it with other related fields. We also wanted to draw attention to other areas of research into plants that maintain and improve health. In this way, contemporary and historical treatments were juxtaposed, Egyptian, Hittite, Greek, Roman and later European herbal medicine, to mention only the most important regions studied in these proceedings. The conference was held in two languages, English and Hungarian, but all the articles in the proceedings are English. We hope that this way we can bring these issues to the attention of as many people as possible.

This time we have chosen to discuss the plants used for health problems. A significant proportion of the substances in ancient Egyptian prescriptions are of plant origin. Reviewing and studying their effects and data can also provide new opportunities for the current pharmacopoeia. Our group of doctors thought that there was a lot of new knowledge to be gained in this area worldwide, and that the knowledge of plants is becoming increasingly important, if we only think of the research into pathogens, many of which have adapted to synthetic drugs. We need thus new materials to use to eliminate them, and earlier medical practices may lead to the discovery of new active substances that are important for people today. Knowledge of these active ingredients makes it possible to apply these drugs as new medicines in a consistent quantity and quality. On the other hand, there are also many places where conditions do not allow the use of drugs produced by modern technology, but nature can help patients with its often hidden treasures. In addition to pharmacological research, folk remedies studied by ethnomedicine

and historical medical research play an essential role in getting to know them.

The HEFS AEC partly organizes its activities in cooperation with other organizations – the above-mentioned international workshop of the Nephthys project in 2022 was co-organized by the Hungarian Natural History Museum, while this very conference took place in partnership with the HNM Semmelweis Museum of Medical History, whose members gave several lectures on historical medicine and modern ethnomedicine, and where a special chamber exhibition would have welcomed the participants in honour of the conference, if the COVID had not prevented the organization of a face-to-face meeting. Nevertheless, we were able to offer the possibility of discussions and consultations in special virtual chambers, allowing the exchange of professional experiences.

The HEFS AEC has published these new proceedings, this time in two volumes (Aegyptus et Pannonia VII-VIII), containing more than half of the papers presented at the conference: “Plants for Health from Ancient Egypt to Present Day”. As we focused on our main research topic in the Medical Research Group of the HEFC Ancient Egyptian Committee, we wondered what the scientific community thought about the ancient Egyptian use of plants in various fields of human and natural sciences, the continuity of related knowledge, and the implications and possibilities of these ancient practices for people today. We also wanted to present the ideas we had developed and the results we had achieved in the professional field, and to provide an opportunity for specialists to discuss different topics. In terms of the structure of the proceedings, we have returned to the previous method of the series, so that the articles are once again listed in alphabetical order of authors, rather than by subjects

The HEFS Ancient Egyptian Committee and the medical history

The HEFS, which has been operating since 1995, carries out several activities in the tradition of its earlier activities: the general programs focus on the last five thousand years, selecting interesting and important topics, while the work of the AEC is mainly directed in three directions. An important objective is (1) the cultural transmission and dissemination of knowledge about ancient Egyptian culture through lectures and public meetings for interested adults, also in the framework of the Hungexpo. We also organise (2) artistic and handicraft activities, workshops accompanied by discussions on various topics with children, launching every year a fine arts competition (drawing/painting), the results of which will be exhibited for the third time in January 2023 in the Deák 17 Children’s and Youth Art Gallery of the Budapest History Museum; and (3) following scientific and scholarly research into the use of ancient objects, human and animal remains – including an international event of the Nephthys Project in 2022 – and medical history, concentrated on phytotherapy and surgery.

As far as our material at the conference is concerned, we present here as a starting point our research focused primarily on the use of plants in surgery, if only because several members of the group are doctors from the Department of Surgical Research and Techniques at the Faculty of Medicine in Semmelweis University, Budapest. The first scientific results of this new direction are published of today's surgical tools and materials. Thus our conference papers focus on the ancient Egyptian surgery from the point of view of the application of plants in these volumes, but research is alsobeing carried out in other areas. Firstly we present research in the direction that is mainly focused on comparative analysis, directed towards the ancestors surgical kit, the plant materials used for wound care and the general knowledge of ancient Egyptian surgeons, with a view to the surgical culture of other peoples and periods or the use of pharmacognostic knowledge. We have also considered it essential to investigate into possible reasons for the use of plants, which may allow us to consider modern phytotherapeutic applications.

Two other areas of our phytotherapy research are also represented in these volumes. The origin and treatment of various diseases throughout the world, and especially in ancient Egypt, is also an interesting topic. In this direction, we have chosen to focus one disease in particular. Diabetes is one of the most widespread diseases of our time, and we have chosen to study its ancient treatment methods. In this case, as in the case of surgery, we have compared several cultures to find out the ancient knowledge and problem-solving methods, and have pointed out herbs that are officially used in the world, or in Hungary.

Another problem of our time, seemingly far removed from the history of medicine, is the conservation and preservation of biodiversity, which is affected not only by climate change and other natural factors, but also by human activity. This phenomenon can be traced back even to ancient Egypt, although the process has accelerated in the last hundred years. One of our topics in this respect is presented here, showing how an ancient curiosity herb has become a plant of large-scale production in the 21st century, and saving this way the species from extinction.

A new direction of the group is the study of the history of Hungarian phytotherapy in partnership with the Semmelweis Museum for Medical History. We have just taken the first steps in this direction, but we can already say that the classical Roman authors, and the ancient Egyptian knowledge they transmitted also played an important role in official medical practice and influenced folk medicine in our country. It seems that the herbaria published in Hungarian language played a key role in this process.

The interweaving of contemporary and historical issues characterizes many of the articles in the volumes. At the same time, mutual influences, shifts of emphasis and reinterpretations within the ancient world, or elements of later historical periods that reach into the past or present, play a prominent role. In this field, it is essential to collect and examine the sources from a new perspective in order to obtain a clearer picture of certain details of the past. Historical, artistic, literary, religious, economic, museological, pharmaceutical, phytotherapeutic, ethnobotanical or even chemical points of view appear in individual articles. It has been proven that the ingredients listed in many of the ancient Egyptian recipes studied so far can still be used as effective medicines today.

This volume contains 16 contributions on the role of drug use in different periods. There are chapters on the reconstruction of some ancient Egyptian remedies, on the ancient method prescribed for the preparation of antjw ointment, or on the preparation and action of kyphi, and pelargonium, traced through biochemical and experimental research; Others are devoted to the materia medica used in Hungary over the centuries, or to the comparison of contemporary Egyptian folk medicine and pharaonic materia medica in the field of gynaecology; another is devoted to studies on the possible identification of magical Egyptian plant names with a dominant connection to the moon, or to the ritual and non-ritual use of some plant substances with religious names in Egypt. Others relate to the popular treatment of diseases such as tuberculosis and cholera in Hungary, or which edible plants have been identified in Coptic medical therapies. Sedative plants are also featured in the current volume, and a plant closely associated with a butterfly is discussed. Another article focuses on the pomegranate, with its many meanings as a symbol of fertility and female power. Yet another focuses on the worldwide surgical use of plants, while others discuss the balance between practical and religious beliefs in the use of medicinal plants. The pop-up exhibition for the conference is briefly introduced, hinting at the museological aspect of medical history.

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The editors of these volumes would like to thank again all the organizations and individuals who made the conference and the publication of these volumes possible, as well as the speakers, the members of the Organizing and Scientific Committees, the secretary of the conference, and the technical assistance, i.e. all those who contributed to the realization of the conference and who have contributed with their knowledge to the these volumes. Special thanks are also due to the authors of the papers for their work and cooperation.

We would also like to express our gratitude to all those colleagues and volunteers who have shared their expertise and offered their generosity by providing scientific or linguistic proofreading for these volumes.

Thanks are also due to the active participation of Aquila Design, who coordinated and realized the editing and printing and to our financial supporters, the Hungarian Natural History Museum, the Ibisz Bt. and the Kiss Ferenc a Növényi Biodiverzitásért Alapitvány [Kiss Ferenc Plant Biodiversity Foundation], whose aim is to raise awareness of the natural treasures we have and to try to teach people to use them, rather than abuse them.

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Plants for Healing in Papyrus Brooklyn 47.218.75+.86

Juliane Unger

University of Heidelberg, Germany

Abstract

This paper aims to give an overview of the plants and plant-based products used in the yet unpublished medical papyrus Brooklyn 47.218.75+.86, recto. The text is of special interest on the one hand for its date in the 26th Dynasty, from which not many medical papyri have yet been published, and on the other hand for the focus of its prescriptions. A considerable number of them is directed at the treatment of ailments afflicting the back of the ancient patient – a subject yet nearly unattested in Egyptian medical texts. Further remedies are prescribed for afflictions of the lower abdomen, the urinary tract, against intestinal worms and the influence of evil spirits. Another medical text dating slightly later and focusing on gynaecological ailments was written on the verso of this papyrus, but its poorer state of preservation does not allow for drawing extensive conclusions.

Apart from statistics on the employment of plants and other substances in this papyrus one example of a healing plant that has not yet been attested in Egyptian texts will be presented in detail showing possible methods for its identification. It will become obvious how each newly published text can still greatly broaden our knowledge of ancient Egyptian medicine and pharmacology and may also shed some light on the transfer of medicinal knowledge between Egypt and its neighbours.

Keywords: Egypt, Late Period, medicine, *materia medica*, knowledge transfer, *jʿḥ,* simile magic

Introduction

Papyrus Brooklyn 47.218.75+.86 (subsequently Brk) is but one of many papyri which the American scholar and journalist Charles Edwin Wilbour bought during his many travels to Egypt from 1880 to 1896. After his death his large private collection came into the possession of the Brooklyn Museum in

New York in three bestowals in 1916, 1935 and 1947. The papyrus in focus here was part of the latter, which alone consisted of 155 rolls and sheets of papyrus as well as some 100,000 fragments, stored in little carton boxes and envelopes.[1] This situation hasn't changed much in the last seventy years and most of these fragments have not been properly joined yet.[2]

Some of these papyri formed part of an ancient library, which can at least partially be reconstructed. There has been a lot of research on the texts belonging in the last years and some evidence has been collected to place said library on the island of Elephantine in the far south of Egypt.[3]

Brk originally measured at least three meters in length and on it are preserved two medical texts, written by two separate scribes, while a third scribe has done some additions to the recto text below the columns. The recto text consists of around 240 recipes[4] for afflictions of the back and abdomen and can be dated palaeographically to the first half of the 26th Dynasty, around 600 BC.[5] Most special about this text is the localisation of many of the afflictions, its remedies are made for, namely back and backbone. For comparison: The ancient Egyptian terms *j3t* and *psḏ* for backbone and back were known only eight times altogether from already published medical papyri concerning human afflictions.[6] Recipes concerning pains in the back were more or less unknown until now.[7]

1 A comprehensive overview is given by O'Rourke upcoming, See also: Sauneron 1966-1967, 98-99.

2 This is also appropriately described by Jasnow: „Included in the gift were some 130 boxes of papyrus fragments. Although each box received its own number, suggesting that the contents are a distinct papyrus, most contain in fact a hodge-podge of papyrus fragments from totally unrelated texts. Some of these are substantial pieces, but many are mere flakes with no more than a few signs. … Those who wish to publish a papyrus from the group must spend innumerable hours sorting through this jumble." Jasnow 1992, 1-2.

3 Sauneron 1966-1967, 99; O'Rourke – Quack upcoming. For the already published texts of this group see: Sauneron 1970; 1989; Goyon 1972; 2012; Meeks 2006; Jasnow 1992; O'Rourke 2015; Guermeur 2012; 2013; 2015-2016 (only extracts); Unger 2020; 2021 (only extracts).

4 This number includes only the recipes of which at least some traces are preserved. The original extent of the recto would have been much bigger, since large parts of the papyrus scroll are irretrievably lost.

5 The palaeographic comparison is based on the material collected in: Verhoeven 2001.

6 See: von Deines – Westendorf 1961, 16-17, 299.

7 The only two exceptions are pSm 48 (see: Sanchez – Meltzer 2012, 293-298) and pEb200 (see translation by Popko: https://sae.saw-leipzig.de/de/dokumente/papyrus-ebers (last consulted 07.10.2022)).

The verso text on the other hand is much shorter, with only about 22 recipes[8] and focusing on gynaecological problems. It certainly dates later than the recto text approximately to the end of the 26th Dynasty.[9]

One thing both main texts have in common is the way in which most of their recipes are composed. They are relatively short compared to the much more detailed diagnoses we know from papyrus Ebers or papyrus Edwin Smith. Most only name the affliction or disease they were to be prepared for, followed by an enumeration of the drugs[10] to be used, often with their supposed measurements. At the end, we find very short instructions for the remedies' preparation and their application.[11] In the recto text these units are further differentiated by the use of black (drugs, preparation, application) and red ink (title, measurements). The verso is written in black ink completely.

To give some examples:[12]
Recipe x+27 – recto x+3.4. – x+3.5.:
Remedy for preventing the hump of a man. Remedy for Removing the swelling of the "gorging blood" in the vertebrae of his spine: dregs of beer, to be exposed to the dew at night, [to be drunk] therewith.

Recipe x+28 – recto x+3.5.:
Another: leafy twig of jꜥḥ-tree, mud of the garden, honey, to be bandaged thereon.

Recipe x+30 – recto x+3.5. – x+3.7.:
Another for the removal of the šfj-swelling, making comfortable the vessels, calming the vessel(?): sweet fat, fresh incense, fruit of šnj-plant[13], fruit of

8 As with the recto the original number of recipes was higher than what is preserved, but nevertheless the verso text was much shorter in comparison.
9 The palaeographic comparison is based on the material collected in: Verhoeven 2001.
10 The term „drug" is here and below used in its pharmaceutical sense. Therefore, it denotes substances, which are used unprocessed or processed, alone or together with others for preparing remedies.
11 For an overview of the different structures of ancient Egyptian prescriptions see: Westendorf 1999, 81-92.
12 Underlined font marks passages written in red ink. The enumeration might still be subject to change, because there is a large number of loose fragments, future placements of which could alter the current enumeration.
13 This often-used drug cannot be identified with any certainty yet. *Pinus pinea L*. has been proposed but depictions of the harvest of *šnj*-fruits in the tomb of Niankhkhnum and Khnumhotep cannot confirm this. See: Deines – Grapow, 1959, 200-202, and Germer, 2008, 69-71, with

juniper, gjw-plant[14], […] of malt, Nubian haematite, cumin, sʿm-plant[15], dried myrrh, oliv[e oil], [cow]pea, juice of šb.t-gourd, to be bandaged thereon.

Recipe x+31 – recto x+3.7.:
Another: It is to be added honey likewise.

Recipe x+53 – recto x+4.7. – x+4.8.:
Another for removing the st.t-mucosities: […] husk of carob 1/8 dja,[16] šȝšȝ-substance 1/8 dja, sʿm-plant 1/8 dja, gjw-plant 1/8 dja, fruit of šnj-plant 1/8 dja […] [1/32 / 1/64] dja, beer 5 dja, to be heated, to be eaten for four days.

Given this shortness of formulations it seems appropriate to suppose that both texts were of more use as works of reference for already experienced healers, who were able to make a diagnosis without further explanations and descriptions from a textbook. So, if an ancient Egyptian healer knew by the symptoms that his patient suffered from the malevolence of some evil spirit of a deceased person he could find in Brk at least eight remedies to choose from, based on his experience, different attendant symptoms or the availability of certain drugs.[17] Those alternatives are marked by the word *k.t* – "*another*" which is – at least on the recto side of the papyrus – again written in red ink, to allow for a faster overview of the text.

Materia medica of Brk

In light of the focus of this volume let us now take a closer look at the *materia medica* of Brk. The recto text uses 250 clearly differentiable drug names although in certain cases like *bdd* and *bddw-kȝ* or *nḥḥ* and *bȝḳ* it is only different names for the same substance.[18]

further literature.

14 A widely accepted identification of this plant is *Cyperus rotundus L.*, see: Germer, 2008, 146-148. She observes, however, that a delivery of *gjw* in "*hands*" as mentioned in papyrus Harris I, would seem rather impractical for *Cyperus rotundus* and therefore assesses this identification as "weiterhin unsicher", see: Germer, 2008, 148.

15 According to Germer, 2008, 110-111 a possible identification of *sʿm* could be *Artemisia judaica L.*, but no laxative properties are known for this plant, which might be expected for *sʿm* according to the ancient Egyptian prescriptions using it.

16 The volume of one "*dja*" equals 300 cc. The ancient Egyptian medicinal volumes have been accurately analysed by Pommerening 2003. For volumes outside of medicine see also: Pommerening 2005.

17 It is however highly unlikely that Egyptian healers took recipe collection like Brk with them to their patients or even read them during consultations. See for this: Fischer-Elfert 2021, 179.

18 See Pommerening 2010, 53 for the equation of *bdd* and *bdd.w-kȝ,* and Quack 2016, 281 for

Diagram 1 shows the ten most used (or at least preserved) substances in Brk, rt. It's barely surprising to find here many substances which we would in our modern view classify as bases for the actual drugs rather than drugs themselves, like fat, oil or beer. The much bigger number of 153 substances appears only once in the entire recto text. A further 36 drugs are used two times each. The recipes which are sufficiently well preserved for this evaluation use on average six different substances, but there are also compositions with up to 13 components. In contrast, there are also seven recipes with only two substances used and recipe x+27 uses only one drug.

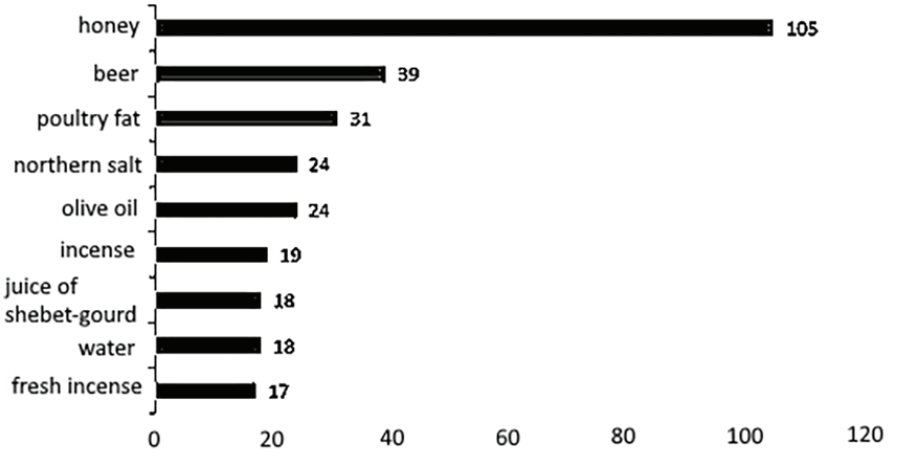

Diagram 1.

Diagram 2 differentiates the *materia medica* of Brk recto according to substance groups. A first significant observation is that more than half of the drugs used are plant-based – 79% of those are unspecified plant names or parts of plants, 12% are constituted of plant resins and further 9% are plant oils. Of the animal-based substances 51% are fats and 22% are made up of different forms of milk used in the recipes. It is obvious in any case that plant-based substances dominate the recipes of the recto. With a total of 11%, fats and oils of animal and plant origin take an important role as well. Meanwhile mineral substances are of minor importance in Brk recto although *ḥm3y.t mḥt.t* – "*northern salt*" is the fifth most often used drug in the whole text. It also makes up nearly half of all the mineral substances used in the recto.

nḥḥ being identical with *b3ḳ*.

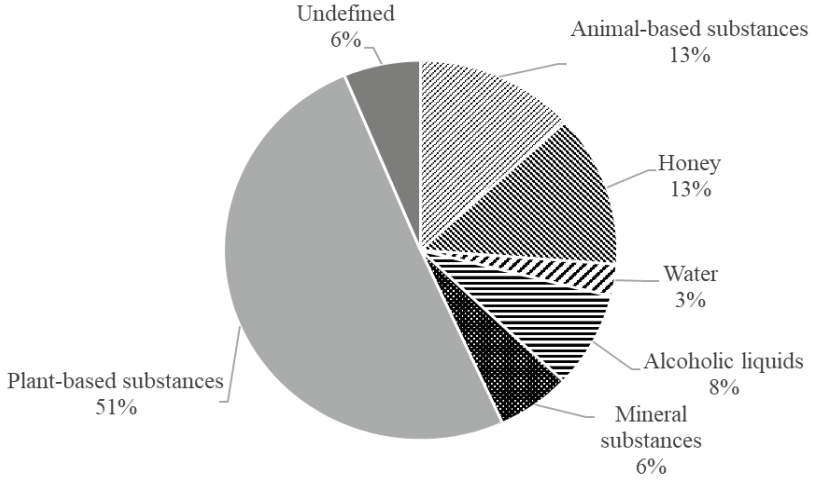

Diagram 2.

There are 43 different drug names in the verso text. With four uses each, *ḥnḳ.t nḏm.t* – "*sweet beer*" and *gjw*-plant are the most often used substances here. Honey, incense, and fruit of *ṯwn*-plant are preserved three times each and another ten substances are used two times. All other drugs in the verso are used only singularly, therefore there are no significant accumulations of certain substances. On average three to four drugs are used per recipe. If we analyse them according to substance groups (see diagram 3), as we did for the recto text, it becomes obvious that although the verso's recipes are directed at totally different ailments, plants are the most common components used here as well. If we differentiate them further, 84% are unspecified plant names or parts of plants and 16% are plant resins, while there are no plant-based oils used in the whole of the verso text. The percentage of animal-based substances is slightly higher in the verso than in the recto, 46% of which are being allotted to different types of milk and 23% to animal fats. Especially the significantly higher proportion of types of milk might hint at a simile-magical correlation to the gynaecological recipes, but the comparatively small extent of the verso is not an adequate foundation for comprehensive conclusions. It still becomes clear, however, that despite the completely different themes of both texts and the divergent number of drug instances the distribution of substance categories is comparatively similar.

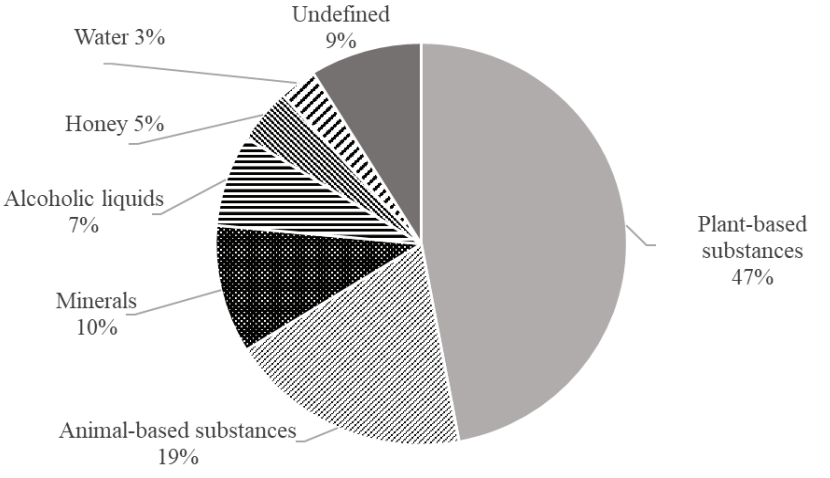

Diagram 3.

Altogether we find that a statistical analysis of these texts can show some broader patterns and thus allows for another way to access the texts' information.[19] It also became obvious that plant-based substances make up a particularly high percentage of all substances in both texts. The comparatively large number of different drugs – even in a short text like the verso – is also striking. 28 of 43 drug names in the verso are used only once (65,1%), in the recto text it is 153 of 250 substance names (61,2%).

An unknown plant from Brk, rt.

There are altogether 24 hitherto unknown drug names in Brk, nine of which are plants according to their determinatives. Due to the texts' preservation and other accompanying factors the amount of information we can gather on those substance-names differs widely. Subsequently the most complex example will be discussed in detail.

jʿḥ –  – which can be translated as „*moon tree*", is used two times in the recto text and maybe once more in the verso text. The determinative makes it clear that the term denotes a tree or a larger shrub. The recipes use its leaves and leafy twigs, but none conveys a measurement for its dosage. Recipe x+10, rt. x+2.1. – x+2.2. unfortunately has no indication preserved about the ailment treated with it and the form of application is

19 For the application of a statistical approach on Egyptian medical texts and the possible results see: Weeks 1976-1978; Ritner 2000, 116; Fukagawa 2011.

uncertain as well but might have been a bandage.[20] Leaves of the "*moon tree*" are here used first in a line of an unknown number of substances: "*Another: leaves of jꜥḥ-tree […] poultry [fat], to be mixed, to be bandaged thereon.*"

A second certain use of this tree can be found in recipe x+28 (see already above for a translation), wherein leafy twigs are to be used in a kind of mud wrap against swellings on the back and for removing the swelling of *wnm snf* – the "*gorging blood*"[21] – in the vertebrae of the backbone. This is indicated by the previous recipe. Once again, the *jꜥḥ*-tree is named first in line, followed by garden mud and honey. No further processing of the ingredients is described.

A third, slightly uncertain use of *jꜥḥ* can be found in recipe x+10 of the verso text. But since this word is not determined by the tree sign (Gardiner M1) and the actual determinatives of the group are barely legible, this passage cannot be used for further considerations about the *jꜥḥ*-tree.

So, by using the two certain references to this substance we can first determine that *jꜥḥ* has to be a tree or larger shrub with leaves. Based on the affliction treated with it in recipe x+28 and the other drugs used there, we might with all due caution expect at least a slightly anti-inflammatory property of said leaves or leafy twigs.

The ancient Egyptian word *jꜥḥ* denominates the moon[22], therefore the already mentioned translation "*moon tree*" seems suitable. Following this line of thought we might also assume that this name was seen in close connection to an Egyptian moon god like Thoth or Khonsu.[23] Especially this possible connection to Khonsu in a recipe against a swelling is interesting because we know from other medical texts from Egypt, that there was also a special type of swelling named after this very god as "*Khonsu-swelling*".[24] This type is not referred to in Brk, but nevertheless the connection is worth mentioning.

Since the name *jꜥḥ* is not written in a syllabic form and seems genuinely Egyptian we may have here a codename for another more common plant name, which receives special effectiveness through this divine connection. Until now

20 There is a larger lacuna in the papyrus material and therefore it cannot be determined with any certainty if the recipe really continued in line x+2.2. as is proposed here, or if it already ended in line x+2.1.

21 For this see: von Deines – Westendorf 1961, 189; Westendorf 1999, 296. A comprehensive overview by Popko can be found online under: https://sae.saw-leipzig.de/de/glossar/blutfrass (last consulted 07.10.2022).

22 Erman – Grapow 1971, 42,7.

23 For the moon and associated gods see: Bonnet 2000, 470-472.

24 See for this: von Deines – Westendorf 1962, 661, and also: Bardinet 2018, 131-194.

the plant part *ḫm* – "*leafy twigs*" is known to be used of only three Egyptian tree names: *tr:t* – probably the Safsaf-willow (*Salix mucronate*), the unidentified *šb.t*-tree and the *jm3*-tree (maybe *Maerua crassifolia*).[25] Since only one recipe with the combination *ḫm jḥ* is preserved in Brk, further considerations based on this can only be speculative.

One last point closely connected to this plant name is of course the possible influence of the tree's appearance on its name. If we consider a morphological analogy to the moon, the overall habitus seems unlikely as the point of comparison. A silvery bark, like European beeches have it, might be plausible. In Egypt *Moringa peregrina* Fiori could be a candidate for this aspect, but because of its rod-shaped, mostly leafless twigs it must be omitted as possible identification for *jḥ*.[26]

More even than the bark, the leaves might provide a suitable base for comparisons: a moon or crescent shape could be proposed as their exterior form as well as a grey to silvery colouration of one or both sides to justify the naming of a tree after the moon. Both aspects – shape and colour – are indeed covered by the Safsaf-willow (*Salix mucronate*), which grows in Egypt. This tree has narrow, lanceolate leaves, which can shimmer silvery-grey on the underside.[27] Furthermore, for this willow we know that its leafy twigs have been used in ancient Egyptian medicine and its anti-inflammatory properties would suit its usage in Brk recipe x+28.[28] We know further that the willow could be seen in very close connection to the moon by the Egyptians.[29] If we assume this identification of *jḥ* to be correct, we would indeed have a codename with a special potency for effectiveness, since the more common name for the willow in Egyptian medicine is known to be *tr:t*.[30]

Based on a morphological analogy of the plant name, it seems worthwhile also to take into consideration the so-called Sodom apple (*Calotropis procera*). This shrub grows in Egypt, can be up to tree high, has silvery-green, broad-oval leaves and comparatively big round fruits. Its flower buds have the form of small silvery-grey balls. So, many aspects of its habitus

25 For *ḫm* see: von Deines – Grapow 1959, 108-109. For the respective trees see: Germer 2008, 25-27, 131, 159-160.

26 Germer 2008, 302.

27 el-Hadidi – Boulos 1988, 104-105; Germer 2008, 333-334.

28 Germer 2008, 159-160, 333-334.

29 Erroux-Morfin 1999. For an overview on the religious associations of this tree see also: Baum 1988, 196-199.

30 Concerning codenames and their proposed healing properties see for example: Pommerening 2016, 87-88; Stiehler-Alegria 2007, 192-196; Quack 1996, 311; Quack 2003, 9-10.

would fit a naming after the moon. [31]

All parts of this plant contain a sap with pharmaceutical properties, but highly toxic in larger doses. Skin contact can lead to chemical burns.[32] This at first glance seems to contradict an identification with *jꜥḥ* since this drug is to be put onto the skin in a bandage without further preparations in Brk recipe x+28. Nevertheless, in Prosper Alpins work "*De plantis Aegypti*" we find his account of leaves of the Sodom apple cut and boiled in water to be used in bandages against ulcers and pains. He also records the sap of this plant being used in mud wraps for removing body hair and dried sap against several skin diseases.[33]

So especially the first reported use of the Sodom apple would provide a connection to Brk recipe x+28, depending on how we interpret the symptoms mentioned there. If this could be proven, it would also be a striking example of knowledge transfer over quite a long period of time. Unfortunately, the precise kind of swelling or ulcer in Brk cannot be determined beyond any doubt so an identification of *jꜥḥ* and *Calotropis procera* on this basis can be assumed only conditionally.

A very important aspect of every remedy has to be of course its possible efficacy. Willow as well as Sodom apple could have a positive effect on the swelling or ulcer treated in Brk x+28 based on their pharmaceutical properties. The same applies for honey. Irrespective of the actual identification of *jꜥḥ*, its name alone and the connection to a moon god – most probably Thoth or Khonsu – allows for a certain effectiveness also from an emic point of view. A further aspect of the emic efficacy of this recipe lies in the mud itself. After the application the whole mixture will probably dry out and slowly fall off the patients back. In a simile-magical way of thinking: as the mud falls off, so also will the affliction fall off the patient.[34]

Conclusion

To sum up: Although the scope of this article does not allow for an in-depth analysis of the many aspects of papyrus Brooklyn 47.218.75+.86, a statistical approach was able to show some broader patterns of the *materia medica* employed here by the ancient Egyptians. For both texts – the

31 See also the article of Francisco José Munguía-Girón in this volume.

32 Germer 2008, 215-216. See also Khairnar et alii 2012; Al Sulaibi et alii 2020.

33 Alpin 1980, 119.

34 On the principle of simile-magic see: Rothschuh 1978. For further examples on how this could have influenced the choice of certain drugs or ways of remedy preparation in ancient Egypt see: Leitz 2002, 2005. For a comprehensive overview on how we can evaluate the efficacy of ancient Egyptian remedies see: Pommerening 2006.

recto concerning symptoms in back and abdomen, the verso focussing on gynaecological afflictions – plant-based drugs rank first among the different substance groups, accounting for about 50% of all *materia medica* in each text. Furthermore, we were able to present two plausible candidates for the identity of the hitherto unknown *jꜥḥ*-tree and those two might not be exhaustive. Both are plausible and might even have been pharmaceutically effective in the remedies prescribing this plant. However, given the small number of sources, which will hopefully expand with further publications of Egyptian medical texts, a decision for one or the other cannot yet be made. Nevertheless, it is striking what we can gain from one unpublished text alone, since this was only one of 24 hitherto unknown substance names of only this papyrus.

Abbreviations

Brk – papyrus Brooklyn 47.218.75+.86
pEb – papyrus Ebers
pSm – papyrus Edwin Smith
rt. – recto
vs. – verso

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