

## An Apothecary's Handbook

M. J. Geller

The proposition that a coherent science existed within Babylonian medicine is based on recognising a highly systematic organisation of medical data in cuneiform sources, and specifically in an Akkadian example of *Listenwissenschaften* devoted to the use of therapeutic drugs. The text, from the Vorderasiatisches Museum Berlin (VAT 8256, hereafter referred to as BAM 1), dating roughly from the 8th-7th century BCE, could be considered as an apothecary's handbook or *Vademecum*. Franz Köcher understood the importance of this tablet, since it was the very first tablet he copied in the BAM series.<sup>1</sup> Although one could view BAM 1 initially as a pharmacological compendium from Assur, it became a popular standard text within the medical curriculum, with copies of the text known from many other sites, with duplicates from Nineveh and Sultantepe, as well as in Babylonian archives.<sup>2</sup> The primary question which remains to be answered is: what was the overall purpose for this text, reflected in the logic behind its structure? The text is neither an inventory of drugs nor is it an explanatory pharmacological text (like Uruanna or Šammu šikinšu, comparing different drugs with each other), but it nevertheless has the general appearance of a lexical tablet. There is no obvious principle of association between entries to explain the order of drugs being listed. So far, the organisational principles behind this tablet have remained unsolved, but an attempt will be made in the present article to offer a solution to this puzzling problem.

The *Vademecum* (BAM 1) is a large three-column tablet, although various lines throughout overwrite the three-column arrangement. Column one consists of a list of drugs (mostly but not always plants), column two lists diseases for which these plants are to be utilised, while column three provides brief instructions for how the drugs are to be handled and administered.<sup>3</sup> The other organisation feature of the tablet is the judicious use of rulings, to separate blocks of entries or individual entries from each other in a sequence which looks more intentional than random. Moreover, the tablet either repeats entries verbatim from a preceding line or arbitrarily uses 'ditto' (KI.MIN or ŠU.BI.AŠ.ÀM), without any obvious reason for the differences. However, one characteristic of the tablet which seems fairly secure is that it deals with *simplicia* or single drugs used against a single pathology, indicated by the fact that each drug is listed as a separate entry, even within blocks of data referring to the same disease. In effect, the main purpose of the apothecary's *Vademecum* was to designate the *minimal requirements* necessary to create rudimentary medical recipes, namely a drug, a disease, and instructions for use.

It is not easy to try to reconstruct how this complex array of information was assembled into a three-column dataset, considering the limitations of working on clay. Unlike a modern-day accountant who can keep a continuous journal of transactions while formulating double-entry bookkeeping, a large tablet like BAM 1 would only stay moist for a relatively short period of time, which means that the compiler of the tablet would either be working from memory or from data gathered from a large collection of medical texts from a readily available archive.

<sup>1</sup> BAM 1 has been edited by Annie Attia and Gilles Buisson, and they made many significant contributions to our understanding of this important text, although without offering a translation. See Attia-Buisson 2012 (JMC 19). An earlier version of this paper was given as the Hans Sloan Lecture of The Worshipful Society of Apothecaries of London (16 April, 2019).

<sup>2</sup> All duplicates are given by Attia-Buisson 2012 (JMC 19): 25.

<sup>3</sup> A concise description of BAM 1 (referred to as the *Therapeutical Vademecum*) is given in Rumor 2018: 452, pointing out structural parallels not only with the Akkadian explanatory text Šammu šikinšu (discussed below), but also with Theophrastus' *Historia plantarum*. These comparisons point to a technical literature which was not random or spontaneous but probably reflected a relatively fixed and recognisable format originating from within a school curriculum.

The puzzling feature of this tablet is how and by what rationale the various blocks of medical data were ordered, which might offer some insights into aspects of pharmacology current in Assur or inherited from earlier scholarship.

The search for clues to this tablet should begin with an overview of the columns. First, the list of drugs in column one is not entirely what we would expect. Under normal circumstances, we encounter familiar drugs used time and time again in compound recipes, derived from plants or parts of trees or readily available minerals. However, in the list of drugs in column one, many of the entries are unknown to extant medical recipes, representing either rare or highly exotic drugs.<sup>4</sup> Furthermore, it is remarkable that the listed drugs appear to be *simplicia*,<sup>5</sup> since in the first millennium BCE we see a marked tendency towards the use of compound recipes containing numerous drugs, with examples of single prescriptions listing as many as 90 drugs.<sup>6</sup> However, this apothecary's Vademecum might in fact be an indication of a renewed interest in simple drugs among Assur medics or scholars, as a way of isolating or identifying the active ingredient of a compound recipe.<sup>7</sup>

Column two is also unusual. Diseases are normally listed according to which part of the human body is affected, from head to foot, as a standard way of organising the data, but this convenient principle is not followed in BAM 1.<sup>8</sup> Consequently, it remains difficult to establish the order of how and why these diseases are listed, or what they have in common. The list in column two begins with tooth decay,<sup>9</sup> then jumps to bladder and bowel disease (with a strange intrusion for psychogenic disease or female infertility), then various types of fevers and paralysis, mixed with psychological ailments, lung disease and cough, jaundice, rectal disease, skin conditions, finally ending with impotence. It turns out, however, to be important to look at the horizontal rulings between lines, which divide the text into either individual lines or block entries, usually conforming to a specific disease listed in column two, i.e. drugs dealing with dental problems or a type of fever or rectal disease are marked off by rulings. So although the diseases are central to the architecture of this Vademecum, the order in which they are listed in BAM 1 so far offers few hints at any possible taxonomy of disease or the central purpose of this text.<sup>10</sup>

<sup>4</sup> It is noteworthy that many drugs commonly used in therapeutic recipes are absent in BAM 1, such as *ankinūte*, *asu*, *elkulla*, *irru*, *suādu*, *šakirū*, *šibburatu*, *šurmēnu*, etc.

<sup>5</sup> The idea of a single drug or *simplicium* used to treat a single disease was a favourite dictum of Franz Köcher, but this rule cannot be applied generally, since the same drugs were often used against a variety of ailments, either in simple or compound forms.

<sup>6</sup> See BAM VII No. 9b (description p. 12). One common pattern in later periods appears to be compound recipes containing numerous drugs, followed by secondary listings of *simplicia*, without any explanation of the distinction between these types of prescriptions.

<sup>7</sup> One of the difficulties in assessing the use of *simplicia* is that text modern editions of medical texts do not often give special attention to the use of simple drugs. The list of *simplicia* in BAM VII pp. 5-6, indicating drugs used to treat both renal and rectal disease, offers some points of comparison with BAM 1.

<sup>8</sup> It is useful to be reminded that organising cuneiform data is a problem; one cannot alphabetise it because there is no alphabet.

<sup>9</sup> The first block of six drugs are to be applied to the surface of the tooth, presumably representing various drugs to treat toothache. This list is followed by a single-line ruling, naming thistle which has to be picked before sunrise and to be applied to the tooth, but an additional note on this entry stands out: thistle picked in this way is designated as a drug for the 'worm', referring to the so-called tooth-worm thought to have caused toothache in the first place. Under normal circumstances, the tooth-worm was addressed by a spell, since the causes of disease are often the themes of incantations rather than drug recipes.

<sup>10</sup> Elsewhere within medical texts, diseases were often listed in a fixed order. An excellent example of this is BAM 228-229 (edited in Bácskay 2018: 203-205), two copies of the same recipe with a list of 46 drugs used in a rinse (*marhašu*) for the following ailments: sun-heat (*himit šeti*), flatulence (*šibiš šāri*), *šimmatu* and *rimūtu* paralyses, *šaššatu*-disease, 'hand-of-the-ghost'-disease, 'hand-of-the-oath'-disease, 'hand-of-mankind'-disease, and any (other) disease (*kal murši*). The recipe adds a comment that, *asūti u mašmaššūti iltazzaz-ma la paṭir*, '(although) healing and exorcism have been available, (it) is not resolved' (ibid. 204). A list of drugs for the same ailments appears in BAM 189 (Bácskay 2018: 202) as well as in the comprehensive compound recipe BAM VII No. 34

Column three consists of concise instructions for how drugs were to be prepared and administered, sparse in comparison with normal prescriptions. In fact, apart from some exceptional remarks which occur periodically, the main instructions for preparing *materia medica* fall into three main categories: crushed and taken internally (usually in beer), rubbed on externally mixed with oil, or applied to the surface of the body, usually in a bandage. This is a gross over-simplification of what is actually found in therapeutic recipes, while omitting many different types of other preparations and applications.

Since the list of diseases and instructions do not readily relinquish their secrets, let us have another look at the list of drugs in column one, which shows some interesting detectable patterns. Sometimes drugs are separated by rulings immediately before and after the drug, which clearly indicates a *simplicium*. In other cases, the rulings divide up the drugs within the same disease section, as in ll. 20-28, in which the first lines are marked off by separate rulings but other entries occur as a group. The first two columns in these lines read as follows:

Ú ILLU NU.LUH.HA	Ú <i>hi-niq</i> BUN
Ú <sup>šim</sup> ŠEŠ	Ú <i>hi-niq</i> BUN
Ú ILLU <sup>šim</sup> BULUH	Ú <i>hi-niq</i> BUN
Ú HENBUR <sup>giš</sup> DÌH	Ú KI.MIN
Ú <i>imhur-lim</i>	Ú KI.MIN
Ú <i>a-zu-pi-ru</i> SIG <sub>7</sub>	Ú KI.MIN
Ú <i>al-la-an-ka-niš</i>	Ú KI.MIN
Ú SUM <sup>sar</sup>	Ú KI.MIN
Ú <i>ha-šá-a-nu</i>	Ú KI.MIN

<u>drug resin of <i>nuhurtu</i></u>	<u>drug for stricture of the bladder</u>
drug bitter aromatic ( <sup>šim</sup> <i>murru</i> )	drug for stricture of the bladder
<u>drug resin of <i>baluhhu</i></u>	<u>drug for stricture of the bladder</u>
drug shoot of thorn-bush ( <i>baltu</i> )	drug ditto
drug <i>imhur-līm</i>	drug ditto
drug green <i>azupiru</i>	drug ditto
drug Kaniš-oak ( <i>allankaniš</i> )	drug ditto
drug garlic ( <i>šūmu</i> )	drug ditto
<u>drug <i>hašānu</i></u>	<u>drug ditto</u>

It is reasonable to posit that these blocks of drugs, diseases, and instructions are modelled after prescriptions in therapeutic texts, which provide more elaborate versions of the same basic information. Often in medical texts, however, a new entry following a prescription reads DIŠ KI.MIN or 'if ditto', without repeating the symptoms, indicating that a new drug or drugs can treat the same disease as in the immediately preceding recipe. A typical example of such separate entries following a prescription, with each line separated by rulings and containing *simplicia*, is known from urinary tract disease (BAM VII 98 [No. 9]):

DIŠ KI.MIN <sup>giš</sup>GEŠTIN.KA<sub>5</sub>.A *tur-ár* SÚD ŠÀ GÌŠ-šú DIRI [.....  
 DIŠ KI.MIN NUMUN <sup>ú</sup>*tu-lál tur-ár* SÚD ŠÀ GÌŠ-šú DIRI [.....  
 DIŠ KI.MIN <sup>na4</sup>PEŠ<sub>4</sub>.ANŠE *tur-ár* SÚD ŠÀ GÌŠ -šú DIRI [.....  
 DIŠ KI.MIN <sup>na4</sup>ÁŠ.HAR *ina* Ì.NUN SÚ[D .....

(Bácskay 2018: 197-201). All of these texts refer to the same list of diseases, beginning with 'sun-fever' (*himiṭ šēti*), in precisely the same order. It may be that all of these conditions were indicated by fever and paralysis, but the fixed order of these lists reveal a standard pharmaceutical episteme common to medical texts, but not shared by BAM 1.

DIŠ KI.MIN<sup>na4</sup> ĀŠ.HAR<sup>na4</sup> AN.ZAH *ina* Ì.NUN SÚD [.....]  
 DIŠ KI.MIN NUMUN<sup>giš</sup> ESI GAZ SIM *ina* A GAZI<sup>sar</sup> u GA *tara-ba*[k] .....

If ditto, dry out and crush fox-vine(-wood) and soften the *shaft* of his penis [.....].  
 If ditto, dry out and crush seed of *tullal*, soften the *shaft* of his penis [.....].  
 If ditto, dry out and crush 'donkey-vulva'(-shell), soften the *shaft* of his penis [.....].  
 If ditto, crush *ashar* in ghee [.....].  
 If ditto, crush *ashar* and frit in ghee [.....].  
 If ditto, pound and sift the seed of *ušû*(-wood), you stir it in *kasû*-juice and milk, [.....]

These lines occur within a large format four-column library tablet. By way of comparison, a similar listing of simplicia occurs in a single-column tablet (an IM.GÍD.DA, BM 38583) with extracts from various recipes (*bulṭu*) enumerated with minimal wording, without elaboration.<sup>11</sup> One passage (ll. 3'-11') reads,

DIŠ NA *sa-ma-nam* GIG Ì<sup>giš</sup> EREN ŠÉŠ-su<sup>úr</sup>[u-.....]  
 DIŠ-niš HÁD.DU<sup>šim</sup> GÚR.GÚR<sup>šim</sup> LI SÚD *ana* Š[À-šú ŠUB-di]  
 PA<sup>gi</sup> ZÚ.LUM.MA *ina* UGU *tu-ṭ*[a-ap-pi TI]  
 DIŠ KI.MIN SAHAR *a-sur-re-e ša* É SUMUN *ina* K[AŠ NAG]  
 DIŠ KI.MIN SUHUŠ<sup>úr</sup> EME.UR.GI<sub>7</sub> *ina* GÚ-šú GAR-[an]  
 DIŠ KI.MIN PA<sup>úr</sup> us-ra-nu *ina* GÚ-š[ú GAR-an]  
 DIŠ KI.MIN *a-lu-tú* HÁD.DU SÚD *ina* Ì [ŠÉS]  
 DIŠ KI.MIN<sup>úr</sup> AM.SI.HAR.RA.NA *ina* Ì [ŠÉSŠ]

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6 *bu-ul-ṭù ša sa-ma-nam* G[IG]

If a person suffers from *samānu*-disease, you rub him with cedar oil,  
 you dry ...[...] together, you pound *kukru* and juniper and [put] into it,  
 you apply fine leaf of 'date-reed' (*kūru*) over (it) [and he will get better].  
 If ditto, [you have him drink] in beer dust of the latrine of an old house.  
 If ditto, you put on his neck root of 'dog's-tongue'-plant.  
 If ditto, [you put] on his neck leaf of *urānu*-plant.  
 If ditto, you dry out (and) pound crab,<sup>12</sup> [you rub it on] in oil.  
 If ditto, you [rub on with] 'gecko'-plant in oil.

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6 recipes of *samānu*-disease

Not only are parallels with BAM 1 clear from this passage, but the remainder of this relatively small tablet contains similar lists of simplicia, as aptly described by Schmidtchen in his edition of the text. Another entry provides 12 recipes for jaundice, headed by the simple phrase (l. 12'): DIŠ NA *a-mur-ri-qa-na* GIG<sup>úr</sup> NÍG.GIDRU SÚD *ina* KAŠ [NAG], 'if a man suffers from jaundice, you pound 'shepherd's-staff'-plant and [you have him drink] it in beer'. The following 11 entries each begin with KI.MIN, a simplicium, and the instruction to be drunk in beer,<sup>13</sup> and the section ends with a familiar rubric, '12 recipes (*bulṭu*) for jaundice-disease'. While the tablet

<sup>11</sup> See Schmidtchen 2018: 462-469, with an excellent hand copy of the tablet. The edition here has some minor suggestions for restorations, mostly based on the assumption that ends of the lines can be restored.

<sup>12</sup> This assumes that the ingredient here is *allutu* 'crab' rather than *alūtu* 'beet', since beet is unlikely to be pounded. See Schmidtchen 2018: 468 for the use of crab in medical recipes.

<sup>13</sup> Schmidtchen's restoration of the ends of these lines with *ina* KAŠ NAG is convincing.

does not duplicate entries in BAM 1, at least five of the drugs appear in both texts, although in a different order: juniper (*burāšu*), root of 'dog's tongue'-plant (*lišān kalbi*), licorice (*šūšu*) 'date-reed' (*kūru*), and *namruqu*. The question raised by this Late Babylonian tablet is whether its contents were taken from another handbook similar to BAM 1, or conversely whether the contents of BAM 1 were based upon various entries from numerous separate sources which were then compiled into a large six-column compendium.

Although such chicken-or-egg questions are unlikely to be resolved, it is reasonable to assume that this relatively common type of medical idiom (i.e. a list of *simplicia*) was likely to have served as a model for BAM 1. Following this logic, multiple entries of drugs between rulings in BAM 1 all represent *simplicia*, which would otherwise appear in successive recipes in medical recipes introduced by 'ditto', as alternative treatments for a given disease or symptoms.

Some drugs stand out as unusual. It is worth noting that *Dreckapotheke* hardly occurs in the apothecary's *Vademecum*, except in two exceptional drugs referring to 'sailors' excrement' and 'sailors' dust,' both probably indicating the same drug (ll. 49, 79).<sup>14</sup> Apart from these exceptional cases, another feature of the list is that the same drug appears within sequential listings of diseases. For instance, the drug *baluhhu* occurs at the end of one block of drugs for teeth (l. 14) and slightly later at the end of a block for stricture of the bladder (l. 23). Another case is the use of the drug *kamantu* or seed of *kamantu*, which appears repeatedly at the head of a list of drugs for *ašū*-disease (l. 61), as well as at the top of a list of drugs for flatulence (l. 74). The same drug *kamantu* occurs in the following section among drugs for *samānu* (l. 83), and then again at the head of the list for the very next disease in sequence, lung disease (l. 86). Not to belabor the point, the seed of *atkam* appears in a single entry for lung disease (90), and shortly thereafter at the top of the list for 'cough' (93). It is possible that the repetition of the same drugs for different diseases may provide clues to the organisation of the list; similar ingredients may have been one criterion for why diseases were listed in a certain sequence, indicating some basic commonalities in treatment.

But we still have column three to consider. Under normal circumstances, one would treat the third column of instructions as the least significant aspect of this text, since these entries refer to the simple mechanics of drug preparation, having little to do with theory. But this may well be wrong. A cursory glance at the list shows how these instructions tend to occur in blocks, either associated with a single disease, or alternatively the same instructions appear with various diseases, even if separated by rulings.<sup>15</sup> This suggests another potential clue to BAM 1, that instructions for administering drugs could have also been a factor in how the lists were ordered.

### *Grist for the Mill*

In the search for the external source material which may have contributed to our apothecary's *Vademecum*, it may be instructive to compare the gall-bladder-disease section (BAM 1 ll. 29-34) with BAM 578 i 20-26 (Suālu). The entries in this Nineveh recipe, in an atypical tabular format, all refer to *simplicia* to be drunk in beer:

<sup>14</sup> Both of these examples were to be applied externally to the patient, but in one case for fever and in another case for a type of skin disease.

<sup>15</sup> An example of this occurs in ll. 36-51, listing different ailments, each separated by ruling, and each designating a different drug in the first column; in column three for these lines, the instructions for treatment mostly recommend rubbing in oil.

Ú.DILI Ú ZÉ *ina* KAŠ NAG  
 Ú *me-er-gi-ra-nu* Ú ZÉ *ina* KAŠ NAG GAZI<sup>sar</sup> Ú ZÉ *ina* KAŠ NAG  
 Ú <sup>šim</sup>LI Ú ZÉ *ina* KAŠ NAG Ú NU.LUH.HA Ú ZÉ *ina* KAŠ NAG  
 Ú BAR <sup>giš</sup>*šu-ši* Ú ZÉ *ina* KAŠ NAG PA <sup>ú</sup>*al-la-nu* Ú ZÉ *ina* KAŠ NAG  
 Ú U<sub>5</sub>.ARGAB<sup>mušen</sup> Ú ZÉ *ina* KAŠ NAG Ú LAG MUN Ú ZÉ *ina* KAŠ NAG  
 Ú SUM<sup>sar</sup> Ú ZÉ *ina* KAŠ NAG Ú SUHUŠ <sup>giš</sup>NAM.TAR NÍTA Ú ZÉ *ina* KAŠ NAG  
 Ú SUHUŠ <sup>giš</sup>*šu-ši* Ú ZÉ SÚD *ina* Í u KAŠ NAG Ú *ši-ba-ru* Ú ZÉ SÚD *ina* A NAG

'Single'-plant, gall-bladder drug, to drink in beer.

Drug *mergirānu*, gall-bladder drug, to drink in beer. *Kasû*, gall-bladder drug, to drink in beer.

Drug aromatic juniper (*burāšu*), gall-bladder drug, to drink in beer. Drug: *nuhurtu*, gall-bladder drug, to drink in beer.

Drug peel of licorice (*šūšu*), gall-bladder drug, to drink in beer. Oak (*allānu*) leaf, gall-bladder drug, to drink in beer.

Drug bat guano, gall-bladder drug, to drink in beer. Drug lump of salt, gall-bladder drug, to drink in beer.

Drug garlic, gall-bladder drug, to drink in beer. Drug male mandrake (*pillû*) root, gall-bladder drug, to drink in beer.

Drug licorice root, gall-bladder drug, to pound and to drink in oil or beer. *Šibaru*, gall-bladder drug, to pound, to drink in water.

Despite the strong resemblances in formatting and layout and some overlap in content, these drugs against gall-bladder-disease in Suālu are not generally the same as those in BAM 1. What do we make of such seemingly contradictory evidence? The drugs in both lists share more-or-less the same instructions, to be imbibed in beer, which is a shorthand formulation for saying that the drugs are for internal consumption. Yet it is unlikely that BAM 578 could have derived from a source text for BAM 1.

One of the enduring mysteries is why Tablet 59 of the omen series Šumma ālu is attached to the reverse of BAM 1, which is a highly exceptional situation.<sup>16</sup> The fact that 26 out of 42 plants listed in Šumma ālu 59 are also to be found in BAM 1 might explain the connection between the genres, but many questions remain. The function of Šumma ālu Tablet 59 appears to highlight the ominous (mostly negative) consequences of plants<sup>17</sup> being 'disturbed' or being 'worried' (*adir*) in their natural habitat, presumably before being gathered as *materia medica*. It is noticeable, however, that many plants or trees mentioned in Šumma ālu 59, which commonly feature in medical recipes (e.g. cedar, cypress trees, *taškarinnu* trees, *šalālu*-reed, or *kanaktu*-aromatic), are absent in BAM 1. Moreover, had Tablet 59 served as a source text, it would probably have appeared at the beginning of the Vademecum rather than as an appendix at the end, and the order of entries in BAM 1 would probably have adhered more closely to Šumma ālu. A reasonable explanation may be that Šumma ālu 59 served as an appendix to BAM 1 because the omen apodoses were deemed to be relevant to the correct administration of the drugs. In any event, the omens provided a view of *materia medica* not otherwise found in medical recipes, describing possible consequences if plants were not correctly gathered or handled. This kind of meta-data in the form of omens predated astrology

<sup>16</sup> It is important to note the important parallel with KADP 1 (columns 5-6), which adds the Vademecum section (drug, disease, instructions) as an appendix to a list of plants. It is this appendix to KADP 1 (discussed below) which is the earliest evidence for a Vademecum format resembling BAM 1, and the fact that both of these texts include an appendix at the end which deviates from the format of previous columns may not be coincidental. The only other example known to me of an addendum of a different genre -- added to the end of a text -- occurs in an astronomical tablet with schematic drawings of constellations (MLC 1866), see Beaulieu, Frahm, Horowitz, Steele 2018: 7-8.

<sup>17</sup> It is relevant that no minerals are mentioned in Šumma ālu Tablet 59 among *materia medica*.

and the genres of astral magic and medicine which developed in later periods, which associated *materia medica* (plants, trees, and stones) with zodiac signs and predictions from astral influences.<sup>18</sup> Moreover, it seems likely that Šumma ālu 59 already existed in a standard form before BAM 1 was composed. The two texts were entirely independent, as far as their respective compositions were concerned, but both examples of *Listenwissenschaften* relied upon knowledge of medicinal drugs, some common and some rarely attested.

One general conundrum regarding lexical texts is whether they borrowed directly from literary sources, or whether *belles lettres* drew freely upon lexical sources for vocabulary, or a combination of both.<sup>19</sup> While it seems plausible that BAM 1 extracted data (lists of plants, lists of diseases, etc.) from various sources, no other known listings of drugs quite resembles the layout of BAM 1. The great pharmacological compendium, Uruanna, for instance, provides data on plants and occasionally diseases to be treated,<sup>20</sup> but no other list provides a tabulation of diseases together with treatments (corresponding to columns two and three of BAM 1). The text most comparable to BAM 1 is the botanical commentary Šammu šikinšu, which gives a brief description and name of a plant, then states what the plant is good for, and finally adds minimal instructions for treatment;<sup>21</sup> but the text is not in tabular form like BAM 1, nor is there much overlap in terms of contents between the two texts. None of these pharmacological works can be seen as a model for BAM 1.

As mentioned above, the problem of envisaging how a text like the Vademecum was composed is that the modern default for creating a text is a single author who can preferably be named (e.g. Esagil-kīn-apli, Aristotle, Galileo, etc.), who would gather all relevant data in his studio or workshop and compile a tabular version of his research results. This view imagines hundreds of medical tablets being assembled, with each Vademecum entry representing an excerpt of simple drugs from a large array of prescriptions or pharmaceutical lists. In this ideal scheme, rulings between entries would represent individual sources or tablets, while multiple entries between entries would reflect alternative simple drugs employed against the same disease. Alternatively, different sections of this text could possibly have been the work of different scholars in various locations and times, with a variety of aims or organisational

<sup>18</sup>Pioneering work on *materia medica* associated with astrology can be found in two important short articles, Heeßel 2005 and 2008.

<sup>19</sup> See the discussion regarding the connection between the lexical list Izi and literary texts in Crisostomo 2019: 195-197.

<sup>20</sup> A new edition of plant lists by J.A. Scurlock with copies of sources by J. Fincke is promised to appear shortly. A short excerpt of Uruanna can be found in Scurlock 2014: 289-291. Nineveh medical archives also preserve extensive lists of medicinal plants organised according to ailments or uses (e.g. as a salve, etc.), e.g. BAM 430 and 431; for a recent discussion of the importance of these plant lists, see Simkó 2018: 547-552.

<sup>21</sup> See the excellent edition in JMC 18 and 19 (Stadhouders 2011 and 2012). The term *šiknu* in this text refers to the 'nature' or properties of medicinal plants, for which a parallel to Greek *physis* 'nature' can be found in Plato's Phaedrus, citing a statement from Hippocrates out of context:

« Then see what Hippocrates and true reason say about nature (*physeōs*). In considering the nature of anything, must we not consider first, whether that in respect to which we wish to be learned ourselves and to make others learned is simple or multiform (*haploun ē polueideis*), and then, if it is simple, enquire what power of acting (*dunatoi*) it possesses, or of being acted upon, and by what, and if it has many forms, number them, and then see in the case of each form, as we did in the case of the simple nature, what its action is and how it is acted upon and by what? (Plato, *Phaedrus*, trans. H. N. Fowler, (Loeb No. 36), 548-49. »

The vague meaning of the passage within Platonic philosophy obscures the original purpose behind the Hippocratic observation, which refers to expertise required to know the 'nature' (*physis*) of 'simple' and 'multiform' (*haploun ē polueideis*) medicinal plants, and their 'powers' (*dunatoi*) or effective properties. Recognising that both terms *haploun* 'simple' and *polueideis* 'multiform' can refer specifically to plants (according to Liddell and Scott) allows for a clearer understanding of the original meaning of the Hippocratic passage, which was co-opted by Plato for different reasons entirely. This reading of the Hippocratic quotation also indicates similarity between the terms *physis* and *šiknu*, since the latter term (in the explanatory text of Šammu šikinšu) was not describing the 'appearance' of medicinal plants (which were designated as 'good' for use against various diseases) but their effective medicinal properties or 'nature'.

considerations in mind, but in the end the work of a single compiler would probably have been responsible for the final redaction.

If such were the case, however, one would expect much more consistency between the entries, since the purpose of such a list would not have been to copy verbatim from recipes but summarise the crucial information from a large number of tablets. In fact, there is considerable variation, especially in how repeated information is noted, in three very different ways. Entries either repeat the information verbatim (e.g. the name of the disease or instructions for use), or make liberal use of the notation KI.MIN for 'ditto' or another standard notation for 'ditto', ŠU.BI.AŠ.ÀM.<sup>22</sup> The varied style of BAM 1 entries may suggest different sources consisting of other lexical lists as well as recipes. Let us explore this option further.

### *The Use of Ditto*

To pursue this different line of inquiry, it may be useful to examine the frequent use of the second notation ŠU.BI.AŠ.ÀM for 'ditto' in BAM 1. First, it is important to note that the expression only appears in column three of the main text and once in the apodosis of a Šumma ālu omen (l. 194). This conforms to a general pattern in omens, where ŠU.BI.AŠ.ÀM tends to occur in omen apodoses, while the similar expression KI.MIN can appear in either the protasis or apodosis. Second, ŠU.BI.AŠ.ÀM appears sporadically in Šumma ālu omens, but mainly in manuscripts from Assur.<sup>23</sup> Third, it is noteworthy how elusive the expression ŠU.BI.AŠ.ÀM is in other genres, e.g. attested in a Nippur medical text<sup>24</sup> and occasionally in the anti-witchcraft corpus in tablets from Babylon and Uruk.<sup>25</sup> So how do we explain the many uses of this notation in BAM 1? In fact, it is difficult to discern a pattern among examples of ŠU.BI.AŠ.ÀM from the third column of BAM 1, as in ll. 61-72, treatments for *ašû*-disease:

<sup>22</sup> The notation ŠU.BI.AŠ.ÀM appears 30 times in BAM 1, and once in the Šumma ālu section (l. 193).

<sup>23</sup> I have not conducted an exhaustive survey, but so far I have not found the phrase ŠU.BI.AŠ.ÀM in any Nineveh recensions of Šumma ālu omens. Compare the Nineveh and Assur manuscripts of Šumma ālu Tablet 23 100-103 (in the edition of Freedman 2006: 46), based on K 2925: 12'-14' (P237752):

[DIŠ MUŠ ina É LÚ ina h]a-ru-ri NÁ-iš É.BI BIR-*lah*

[DIŠ MUŠ ina] *al-sur-re-e* É NA ú-lid É.BI BIR

DIŠ MUŠ ina a-sur-re-e É NA NÁ-iš É.BI [BIR]

If a snake reclines on a grindstone in a man's house, that house will be dispersed.

If a snake gives birth in the latrine of a man's house, that house will be dispersed.

If a snake reclines in the latrine of a man's house, that house will be dispersed.

Compare its Assur counterpart, based on VAT A 453+ (Heeßel 2007 [KAL 1]: 46, 26-28):

[DIŠ] <sup>1</sup>MUŠ<sup>1</sup> ina [É] LÚ ina ha-ru-ri NÁ-iš É.BI ŠU.BI.AŠ.ÀM

[DIŠ M]UŠ in[*a a-sur-re*]-e É LÚ Û.TU <sup>1</sup>ŠU. BI.AŠ.ÀM

[DIŠ M]UŠ ina *al-[sur-re]-e* <sup>1</sup>É<sup>1</sup> LÚ NÁ-iš É.BI <sup>1</sup>ŠU.BI.AŠ.ÀM

An older duplicate of this same text from Assur (Heeßel 2007 [KAL 1]: 35) also includes the same ŠU.BI.AŠ.ÀM phrase.

<sup>24</sup> BAM 398, dupl. BAM 138 ii 1-8, see J.A. Scurlock 2014: 561-62. In each of four ruled sections, the recipe ends with a variation of the phrase, *ina* KUŠ *te-ter-ri ba-ah-ru-us-su* ŠU.BI.AŠ.ÀM, 'you smear (*materia medica*) on leather and while hot, ditto (= bandage him so that he recovers).' An alternative expression ŠU.BI.GIN<sub>7</sub>.NAM for 'ditto' appears once in eye disease texts, but only in a rubric, see IGI 1 l. 124' (Geller and Panayotov, 2020): KA.INIM.MA IGI.GIG.GA.KAM DÙ.DÙ.BI ŠU.BI.GIN<sub>7</sub>.NAM.

<sup>25</sup> Abusch-Schwemer 2016: 15 (= CMAwR No. 3.4: 24), editing SBTU 2, 22 + 85) gives the following incipit: DIŠ NA *gi-na-a šu-dur* ŠU.BI.AŠ.ÀM. This phrase refers back to the previous incipit (ibid. p. 13: 1), DIŠ NA *gi-na-a šu-dur ur-ra u mu-ši ina-an-ziq* ZI.GA-su *sad-rat*, 'if a man is constantly afraid and worried day and night, his losses occur regularly'. The 'ditto' phrase completes the clause. A second example can be found in the same volume (CMAwR No. A.1: 21', see p. 440), in a Late Babylonian tablet (BM 47695+) to undo witchcraft (*ana pišerti kišpī*). A third example can be found in Abusch-Schwemer 2020: 53-54 (CMAwR No. 5.2), in a text to prevent witchcraft from affecting a pregnant woman. These are all isolated occurrences of ŠU.BI.AŠ.ÀM in the extensive anti-witchcraft corpus, from Assur, Uruk, and Babylon, but there are no apparent instances of the notation from Nineveh in these sources. Interestingly, the one occurrence of ŠU.BI.AŠ.ÀM in MUL.APIN (Hunger-Steele 2109: 102) appears in three manuscripts, but none of these are from Nineveh.



col. 2	col. 3	
Ú <i>a-ši-i</i>	SÚD <i>ina</i> Ì.GIŠ ŠÉŠ	(to pound, to rub on in oil)
Ú <i>a-ši-i</i>	SÚD <i>ina</i> Ì.GIŠ ŠÉŠ	(to pound, to rub on in oil)
Ú <i>a-ši-i</i>	NA <i>qut-tu-ru</i>	(to fumigate a man)
Ú <i>a-ši-i</i>	NA <i>qut-tu-ru</i>	(to fumigate a man)
Ú <i>a-ši-i</i>	SÍG NIGIN <i>ina</i> GÚ NA GAR- <i>nu</i>	(to wrap wool to place on the man's neck)
Ú <i>a-ši-i</i>	SÚD <i>ina</i> KAŠ SAG NAG	(to pound, to drink in premium beer)
Ú <i>a-ši-i</i>	[ŠU.BI.AŠ.ÀM]	(ditto)
Ú <i>a-ši-i</i>	[ŠU.BI.AŠ.ÀM]	(ditto)
Ú <i>a-ši-i</i>	Š[U.BI.AŠ.ÀM]	(ditto)
Ú <i>a-ši-i</i>	Š[U.BI.AŠ.ÀM]	(ditto)
Ú <i>a-ši-i</i>	ŠU.B[I.AŠ.ÀM]	(ditto)
Ú <i>a-ši-i</i>	ŠU.BI.[AŠ.ÀM]	(ditto)

Compare instructions for treating cough (*suālu*), ll. 92-97:

col. 2	col. 3	
Ú <i>su-a-lim</i>	SÚD <i>ina</i> Ì.GIŠ <i>u</i> KAŠ SAG NAG	(to pound, to drink in oil or premium beer)
Ú <i>su-a-lim</i>	ŠU.BI.AŠ.ÀM	(ditto)
Ú KI.MIN	ŠU.BI.AŠ.ÀM	(ditto)
Ú KI.MIN	ŠU.BI.AŠ.ÀM	(ditto)
Ú KI.MIN	ŠU.BI.AŠ.ÀM	(ditto)
Ú KI.MIN	ŠU.BI.AŠ.ÀM	(ditto)

The distribution of KI.MIN and ŠU.BI.AŠ.ÀM in BAM 1 may reflect some original source material from which the data was derived, but this still does not help solve the overall problem of determining how the text was constructed.

It seems likely, however, that the compiler(s) of BAM 1 had expertise in both medical and omen literature, judging by the types of notations found in the text. It would be an oversimplification to conclude that BAM 1 reflects data gathered exclusively from medical recipes. For instance, the final listing of drugs in BAM 1 (ll. 156-161, each line ruled) suddenly deviates markedly from all previous entries:

Ú SU.DAR GU <sub>7</sub>	ŠÀ.ZI.GA	<i>ú-maṭ-ta</i> <sup>1</sup>
Ú <i>a-zal-la-a</i>	KI.MIN	ZARAH NU TUK- <i>ši</i>
Ú <SAG.>DU BURU <sub>4</sub> <sup>mušen</sup>	ŠEG <sub>6</sub> - <i>šal</i> GU <sub>7</sub>	<i>né-ez-zu bu-na-nu-[šú]</i> <sup>1</sup>
Ú <SAG.>DU BURU <sub>4</sub> <sup>mušen</sup> BABBAR	ŠEG <sub>6</sub> - <i>šal</i> GU <sub>7</sub>	<i>ni-ṭil-šú ZÁLAG-ir</i>
Ú GA.RAŠ <sup>sar</sup>	Ú ŠE.LÚ <sup>sar</sup>	<i>šá IGI<sup>2</sup>-šú GIG NU GU<sub>7</sub></i>
Ú LU.UB <sup>sar</sup>	Ú <LÚ.>U <sub>18</sub> .LU <sup>sar</sup>	<i>šá ŠÀ-šú GIG NU GU<sub>7</sub></i>
drug (by) eating <i>šumuttu</i>	impotence	will diminish
drug <i>azallû</i>	ditto	not to have depression
drug head of a raven	you boil and give to eat	its form is to be evacuated
drug head of a white raven	you boil and give to eat	to brighten his eyesight
drug leek	coriander ( <i>kisibirru</i> )	which the one whose eyes are sick is not to eat
drug turnip	<i>amīlānu</i> ('man-like'-plant)	which one whose innards are sick is not to eat

Nothing prepares us for this sudden change. In these concluding lines, column one offers some exotic as well as ordinary ingredients; column two gives both alternative plants and instructions; column three describes the effects of therapy or warnings when the drug should not be taken. A possible parallel for these lines is an unusual and unique Assur tablet (A 522 = BAM 318), now recopied and edited in Schwemer 2013. As Daniel Schwemer notes (p. 184), some sections of this text are directly drawn from Šumma ālu, which raises a red flag for us. Additionally, BAM 318 likewise contains numerous examples of simplicia, but col. iii 18-28 is a particularly relevant section of this unique tablet, marked off by rulings.

[DIŠ S]AG.DU BAL.GI<sup>ku6</sup> GU<sub>7</sub>-ma SAG.DU-su ši-ib-tú ul DIRI  
 DIŠ [SA]G.DU BURU<sub>4</sub><sup>mušen</sup> GE<sub>6</sub> GU<sub>7</sub>-ma ni-til-šu<sup>1</sup> i-nam-mir  
 DIŠ <sup>1</sup>š<sub>u</sub>-mut-tu GU<sub>7</sub>-ma [la<sup>1</sup>-sa-ma uš-[šab]  
 DIŠ <sup>ú</sup>GA.RAŠ<sup>sar</sup> GU<sub>7</sub>-ma ni-til-šu LÁ-*t*i  
 DIŠ SUM<sup>sar</sup> SUM.SIKIL<sup>sar</sup> GU<sub>7</sub>-ma SAG.KI GIG  
 DIŠ <sup>ú</sup>ša-šu-um-tú GU<sub>7</sub>-ma ni-iš [lib-bi TUK-š<sub>i</sub>]  
 DIŠ LU.ÚB<sup>sar</sup> <sup>ú</sup>LÚ.ÚLU.LU GU<sub>7</sub>-ma [Š]À [GIG]<sup>26</sup>  
 DIŠ <sup>ú</sup>ka-mu-na <sup>ú</sup>kam-ha-tú<sup>27</sup> GU<sub>7</sub>-ma ana x [.....]  
 DIŠ <sup>ú</sup>HUR.SAG <sup>ú</sup>NÍG.BAL<sup>sar</sup> G[U<sub>7</sub>-ma .....]  
 DIŠ <sup>ú</sup>NU.LUH.HA [GU<sub>7</sub>-ma ni-iš ŠÀ] [TUK-š<sub>i</sub>]  
 DIŠ a-zal-lá [GU<sub>7</sub>-m]a ni-is-sa-tú i-m[a-aš-š<sub>i</sub>]

[If] he eats [the] head of a tortoise, his head will not be filled with gray hair.

If he eats the head of a black crow, his eyesight will become bright.

If he eats *šumuttu*-plant, he will increase running.

If he eats leek, his vision will diminish.

If he eats garlic (or) onion, the temple(s) will get ill.

If he eats *šašumtu*-plant, he will have potency.

If he eats turnip (or) *amēlānu*-plant, [the stomach will get ill(?)].

If he eats *kamūnu* (or) truffle, [.....].

If he eats *azupīru* (or) NÍG.BAL-garden plant,<sup>28</sup> [...].

If he eats *nuhurtu*-plant, [he will have] potency.

If he eats *azallû*-plant, depression will diminish.<sup>29</sup>

There is a substantial amount of overlap between these lines of BAM 1 and BAM 318, along with the remark in both texts that eating the head of a crow will diminish one's eyesight. Within this short extract, many of the same plants appear as in BAM 1: *šumuttu*, *karašu*-leek, *laptu*-turnip and its counterpart *amēlānu*-plant (mentioned jointly in both texts), and the *azallû*-plant. Similar consequences from consuming these plants are also mentioned, such as increasing or losing sexual potency, enhanced or diminished eyesight, and relief of depression. The unique character of BAM 318, with its predominant reliance upon simple rather than compound recipes, offers another important comparison with BAM 1. Instead of the usual introductory formula in recipes, DIŠ NA (symptom) GIG, 'if a man is ill with (a symptom)', BAM 318 uses an alternative formulation, DIŠ NA (*ana amēli*) (symptom) NU TE (*la tehê*), 'for (a symptom) not to approach a man'.<sup>30</sup> What follows are rather standard and relatively simple instructions similar to what is found in col. iii of BAM 1, e. g. 'you take' (TI), 'you pound' (SÚD), 'you dry

<sup>26</sup> The proposed restoration is based on BAM 1: 163 col. iii.

<sup>27</sup> A variant of *kam'atu* 'truffle'.

<sup>28</sup> Alternatively, one might read this plant as *Ú šá-pal* (<sup>giš</sup>)KIRI<sub>6</sub>, the 'foot of the garden'-plant.

<sup>29</sup> Schwemer restores the verb as *i-m[a-aš-š<sub>i</sub>]*, 'he will forget' melancholy, which is certainly plausible.

<sup>30</sup> See Schwemer 2013: 186. A similar usage appears in BAM 209.

out' (HÁD), 'you give to drink in premium beer on an empty stomach' (*ina* KAŠ.SAG NU *pa-tan* NAG), etc.<sup>31</sup> All of these features of BAM 318 point to his atypical text from Assur archives as possible source material for the compiler(s) of BAM 1, in highlighting simple drugs regularly used for specific ailments, under a relatively streamlined regime of treatments, but of course, the reverse is also possible, that BAM 318 borrowed this pattern from the Vademecum.

When considering possible sources for BAM 1, one needs to take note of an early 'forefather' or precursor to BAM 1, which is known from an addendum to KADP 1 (Köcher 1955: pl. 1-9), which is a list of medical plants / drugs.<sup>32</sup> The last two columns of this Middle Assyrian 6-column tablet provides evidence for an early Vademecum, in the form of listing drugs, medical conditions, and instructions for administering the drugs (how and when, etc.). Although the tablet does not duplicate BAM 1 except in isolated entries, the overall content is recognisable as the same genre of text, as the following extracts from KADP 1 column 5 will show:

**First extract (KADP 1, col. 5, ll. 6-10)**

[Ú] ŠAKIRA	Ú ŠU.DINGIR.RA.KE <sub>4</sub>	<i>sà-ku ana</i> A.ME[Š ŠUB GU <sub>7</sub> ]
[Ú ŠA]KIRA	Ú ZÚ.GIG	<i>sà-ku ina</i> U[GU ZÚ-šú GAR] <sup>33</sup>
[Ú ŠAKI]RA	Ú LA.RA.AH	<i>sà-ku ina</i> G[Ú GAR]
[Ú .....] x	Ú ZÚ.KUD UR.GI <sub>7</sub>	<i>sà-ku ana</i> IG[I ZÚ.KUD GAR]
[Ú .....]	Ú ZÚ.KUD MUŠ	<i>sà-ku ina</i> N[A GU <sub>7</sub> ]

drug <i>šakirû</i>	drug against 'hand of a god'(-disease), to pound, to [put] into water, [to consume]	
drug <i>šakirû</i>	drug for toothache,	[to place] over [his tooth]
drug <i>šakirû</i>	drug for labour pains,	to pound, [to place] on the neck
drug [.....]	drug for dog-bite, to pound,	to [place] on the surface [of the bite]
drug [.....]	drug for snakebite,	to [have] a man [consume]

**Second extract (KADP 1, col. 5, ll. 20-28)**

Ú NUMUN IN.NU.UŠ	Ú MÚD.MEŠ <i>ina</i> KIR <sub>4</sub> TAR <sup>sig</sup> ÀKA NÍGIN <i>ina</i> MÚD <sup>na4</sup> šá-[ <i>da-nu</i> ]-DAB.BA <i>ta-ša-bu ana</i> KIR <sub>4</sub> .BI GAR- <i>nu</i>
Ú NUMUN IN.NU.UŠ	Ú ŠĀ.ZI.GA.KE <sub>4</sub> <i>ina</i> <sup>sig</sup> HÉ.ME.D[A] <i>ta-ša-me ina</i> šu-pal <sup>gis</sup> NÁ-šú GAR- <i>n[u]</i>
Ú TAR.MUŠ	Ú NÍG.AK.A <i>ana</i> NA NU DIM <sub>4</sub> <i>ina</i> U <sub>4</sub> .NÁ.A NA G[U <sub>7</sub> ]
Ú TAR.MUŠ	Ú ZÚ.KUD MUŠ <i>sà-ku ina</i> Ì.GIŠ ŠÉ[Š]
Ú HAR.HAR-šī ( <i>hašû</i> )	Ú ZÚ.KUD MUŠ <i>sà-ku ina</i> Ì.GIŠ Š[ÉŠ]
Ú HAR.HAR-šī	Ú NÍG.AK.A NU DIM <sub>4</sub> <i>ina</i> U <sub>4</sub> .NÁ.A NA G[U <sub>7</sub> ]
Ú HAR.HAR-pa'-na	Ú [NÍG].AK.A NU DIM <sub>4</sub> <i>ina</i> U <sub>4</sub> .NÁ.A NA G[U <sub>7</sub> ]

<sup>31</sup> It is of interest to contrast the presumed use of 2nd person singular forms in the therapeutic recipes with the infinitives used predominantly in the instructions (third column) of BAM 1. The use of infinitives in BAM 1 applies to verbs in common use, such as SÚD for *sáku*, 'to pound', which appears regularly in the MA parallel KADP 1 col. 5 as *sà-ku* (see below).

<sup>32</sup> I am indebted to Frans Wiggermann for drawing my attention to this tablet. His notes also mention BAM 423, another Middle Assyrian tablet which little actual resemblance to KADP 1, except for the fact that it includes some simple instructions with a listing of plants and diseases. For example, l. 11 reads:

Ú šī-gu-uš-te SIG<sub>7</sub> Ú a-mur-ri-qa-ni SÚD *ina* GEŠTIN SUR NAG  
drug *šīguštu* drug for jaundice to pound, to drink in pressed wine

Parallels with BAM 1 have been noted by Attia-Buisson 2012. One notes frequent use of the notation KI.MIN in this tablet, which is not the case with KADP 1. Although Köcher assumes this tablet to be Middle Assyrian, it may be somewhat later than KADP 1.

<sup>33</sup> The parallel with BAM 1: 1 is obvious, but the position within the listing is different.

drug seed of <i>maštakal</i>	drug (for) stopping nosebleed, to wrap (in) a wad, (which) you soak in the 'blood' of magnetite, to place into the nose
drug seed of <i>maštakal</i>	drug for impotence, (which) you spin in red wool, to place at the foot of his bed
drug <i>tarmuš</i>	drug for magical practice, that it not approach a man, to have a man eat at the end of the month
drug <i>tarmuš</i>	drug for snakebite, to pound, to rub on in oil
drug <i>hašû</i>	drug for snakebite, to pound, to rub on in oil
drug <i>hašû</i>	drug for magical practice, that it not approach a man, to have a man eat at the end of the month
drug <i>haltapānu</i>	drug for magical practice, that it not approach a man, to have a man eat at the end of the month

It is worth noting both similarities and differences between KADP 1 and BAM 1. The obvious parallels are thematic, listing simple drugs and illnesses and instructions, divided by horizontal rulings, with consideration repetition between entries. The same drug (e.g. *šakirû*) can be used for three different unrelated medical conditions, with some variation between instructions (to pound, to consume, or to apply externally). In some cases, variables are minor, such as the use of the same logogram HAR.HAR (confusing for us) to refer to two different drugs, *hašû* and *haltapānu*, both of which are listed against sorcery, with the same instructions. Also, a segue between sections can be determined by repetitions, such as different simplicia (*tarmuš* and *hašû*) being useful for snakebite. The differences are also significant between KADP 1 and BAM 1. First, there is no use of 'ditto' (KI.MIN or ŠU.BI.AŠ.ÀM) in KADP 1, although these feature prominently in BAM 1.<sup>34</sup> Second, the three-column format in BAM 1 cannot be easily detected in KADP 1, despite the fact that both have vertical as well as horizontal rulings. This is significant, since it means that the scribe of KADP 1 did not visualise three separate logical divisions of the text, but that the diseases and instructions were listed together as integral parts of column two. This difference will be significant for our final analysis of BAM 1.

#### *Elementary, Watson*

This brings us to the point of trying to decide how the text of BAM 1 was actually constructed, which also relates to the overall purpose of this text. Let us review the various possibilities individually.

First, one might think that the text revolves around the list of drugs (mostly plants) in the first column as a way of describing a large number of *materia medica*, in terms of diseases which they can treat and how they are administered. There are several obstacles to this proposal. First, the list of drugs is far from complete and many common drugs have been omitted from the list. Second, many of the drugs are duplicated throughout the text, and one would have thought that if this text was a study of drugs, all instances of the same drug would be collected under the same heading, so that one could immediately determine what diseases could be treated by a specific drug.<sup>35</sup> In short, the order of drugs does not appear to answer a hypothetical question, 'what drugs were used against which diseases and in what manner?'<sup>36</sup>

<sup>34</sup> The notation KI.MIN appears in a sequence of lines in BAM 423, another Middle Assyrian precursor to BAM 1, but only sporadically.

<sup>35</sup> This is indeed a feature of KADP 1, as noted above.

<sup>36</sup> There is much we do not know about the drugs listed and any implicit theories involving their applications. For instance, to what extent were drugs for 'hot' conditions (e.g. fever) considered to be 'cold', or which drugs for 'moist' diseases were considered to be 'dry'? This paradigm of opposites is well known from Greek medicine and may have been employed by Babylonian medical theorists as well.

A second possibility is that the diseases / symptoms category in column two was the primary factor in assembling the tabular data, and that drugs and treatments were secondary. On the other hand, the order of diseases does not adhere to the usual head-to-foot anatomical scheme typical of medical literature, and once again the list of diseases and symptoms is selective rather than comprehensive, with many known and common diseases not mentioned. There does not appear to be any logical principle behind the order of diseases being listed, beyond being random. Furthermore, one might have supposed that, were the diseases or symptoms to be determining criteria for the overall organisation of the text, they would have been listed in the first column, followed by the associated drugs and operations in columns two and three. The order of entries in the second column does not appear to address any hypothetical question, such as, 'which ailments were treated by which drugs and under what conditions?' The answers to any such question would not have been easy to find in this tablet.

This leaves us with a third possibility -- which seems counterintuitive -- that the treatment data in column three were significant indicators of the purpose for composing BAM 1.<sup>37</sup> To full appreciate this, we need to start from the end of the text, from lines excerpted from *Šumma ālu*, which provide omen predictions associated with many of the same medical plants. In this case, new information does not come from the list of plants on the left, but on the apodoses in the right hand (or third) column. The question is whether column three of BAM 1 might address the hypothetical question, 'what are the main types of drug applications (internal or external) for particular ailments?'<sup>38</sup>

With this in mind, we note that the *Vademecum* opens with operations dealing with dentistry and ailments of the mouth, all of which involve the external application of drugs directly onto the teeth (*ana* UGU ZÚ-šú GAR-*nu*, ll. 1-14). It is difficult to explain the intrusion of the 'hand-of-the-oath'-ailment immediately following dentistry, but drinking on the new moon (l. 17) is likely to involve beer, since taking drugs in beer is what consistently follows. In ll.18-22 which follow, the use of beer connects various genitalia-related conditions, progressing from retaining semen (lit. 'seed') to 'stricture of the bladder' (*hi-niq* BUN, ll. 23-28) and then to the gall-bladder (or 'bile', ZÉ, ll. 29-33), all related to each other by mixing drugs in beer to be inserted into the vagina, or to be blown into the urethra via a tube, or to be drunk. The most common instruction throughout these sections, however, is: *ina* KAŠ SAG NAG, 'to drink in premium beer', indicated either by repetition of the phrase or by 'ditto'.

Not all the transitions are easy to understand, but the next group of substances and symptoms marks a significant change (ll. 34-36). The instructions for 'sick intestines' (*irrū*) call for medications to be pounded and taken in beer, but the related ailment, *maškadu*, now requires substances to be taken externally by being bandaged in wool or rubbed on (usually in oil). These three lines contain the full repertoire of directives (ingesting, massaging, applying) for internal and external administration.

The pattern then changes again, and the next varied group of illnesses all share the same general instructions of external massage with oil (SÚD *ina* Ī.GIŠ ŠÉŠ, 'to pound and rub on in oil', ll. 37-51). The following section is a mixed bag (ll. 52-57), and the only common element appears to be 'heat stroke' (*himiṭ šēti*) in the second column, continuing on from the previous section (ll. 48-51). The next intrusion of several lines, dealing with depression or magically-induced gloom, is difficult to explain, but what follows is a lengthy section of entries concerning *ašû*-disease (ll. 61-72). Treatments include massage with oil and fumigation (an innovation at this point), as well as bandaging with wool, but beer soon takes over as the main drug medium,

<sup>37</sup> This may be comparable to bilingual parts of a lexical texts like *Erimhuš*, in which the Akkadian entries on the right are primary, with the Sumerian on the left being secondary. This is discussed in detail by Kaira Boddy, *The Composition and Tradition of Erimhuš* (Cuneiform Monographs 52, 2021).

<sup>38</sup> The question might also be rephrased as, 'which diseases are normally associated with external or internal drug treatments?'

usually indicated by 'ditto' (for SÚD *ina* KAŠ SAG NAG, 'to pound, to drink in premium beer'). The sequence is interrupted at this point by a notation which overrides the three-column format, advocating that various drugs be applied externally in a heated state by rubbing onto the head (l. 73), perhaps again alluding to *asû*-disease. This lengthy line, however, provides a segue to the next groups of entries for treating flatulence (*šibiṭ šāri*, lit. 'attack of wind') and *samānu*-disease, which have nothing in common except that drugs are usually to be rubbed onto the body externally, either in oil or ghee, with the exception of one drug (*hašû*) to be imbibed in beer (l. 75). Nevertheless, almost all drugs for the various ailments in these sections (ll. 61-86) are to be applied externally (SÚD *ina* Ì.GIŠ ŠÉŠ, 'to pound and rub on in oil'), regardless of ruled divisions between different diseases or symptoms.

Another transition follows, with the first line of a section dealing with sick lungs again calling for drugs to be massaged (l. 88, SÚD *ina* Ì.GIŠ ŠÉŠ), but all subsequent drugs are to be administered internally for lungs, wheezing, coughing, *šīqu*-illness, phlegm, jaundice, and even the bowels (ll. 87-117), involving drugs mixed with beer, or less commonly with oil, honey, wine, or juice. Remaining patterns are much the same, with drugs placed over the surface of a lesion, or mixed with oil or fat and inserted into the anus to treat rectal problems; once again, the drugs and diseases change, but the procedures in column three are stable, crossing over ruled sections. The repetitions of entries and frequent use of 'ditto' in the third column of BAM 1 provide the strongest clues to the loose structure of the text, namely that the sequence of diseases and their associated drugs were listed roughly according to the type of treatments employed, indicating whether drugs were to be taken internally (usually with beer) or externally (usually rubbed on with oil or bandaged).

The pattern is complicated, since the logical associations between groups of entries appear to alternate at times between the second and third columns, indicated by repeated entries bridging ruled sections. What conclusions can we draw from this patchwork evidence? Clearly there is a system at work which is never explained by ancient physicians, but which appears to be something other than arbitrary.

### *Schematic modelling*

One novel view of BAM 1 is to treat the entire composition as a modelling exercise, similar to those employed in Babylonian astronomy and astrology. According to Francesca Rochberg, schematic models were employed in texts such as MUL.APIN and the so-called Astrolabes to chart the length of daylight hours throughout the calendar year, or the more abstract 'zigzag' schemes charted the motion of a celestial body through zones of the zodiac; modelling could also be used to track the first and last visibility of a planet or new and full moons.<sup>39</sup> Rochberg's crucial point, however, is that astronomical models were not intended to reflect reality or the 'accuracy of representation of the physical or natural world,' but rather used mathematical analogies to solve astronomical problems (Rochberg 2018: 144). Although such concepts are difficult for non-mathematically inclined non-astronomers to comprehend, nevertheless, the modelling concept can arguably be carried over into other Mesopotamian disciplines, and specifically medicine, despite having no actual mathematical component. To show how this works, the astronomical text MUL.APIN offers important comparisons with BAM 1 in regard to modelling. One of the classic features of MUL.APIN is the use of a 360-

<sup>39</sup> See Rochberg 2018: 136-137, 141. Francesca Rochberg also notes, in an article soon to be published, that Babylonian astronomical models reflect a 'world constructed of numbers, measures, and numerical relationships', as opposed to an image framed by an all enclosing celestial sphere. She points out that astronomical models of lengths of daylight hours throughout the year were already worked out in the Old Babylonian period, and that numerical values for these models were provided in the later 'astrolabes.' This information is important for showing that abstract mathematical models were already known in the second millennium BCE. Her observations will appear in F. Rochberg and J. L. Berggren, 'Describing and Understanding the World in Antiquity', in Michael Friedman ed., *A Cultural History of Mathematics in Antiquity*, Vol. 1, Chapter 5, (forthcoming).

day calendar, which arbitrarily assigned 30 days to each of 12 months in the year. As Hunger and Steele note:

It is important to stress that the schematic 360-day year never replaced the luni-solar calendar as a true calendar used in everyday life. Instead, the schematic calendar existed purely as a simplification of the true calendar, both to make calculation easier and to provide a fixed framework to place events (in our case, astronomical phenomena) in a schematic fashion. (Hunger and Steele 2019: 8)

As this statement makes clear, an entirely theoretical calendrical scheme was employed which everyone knew to be unrealistic but convenient for calculations, while also employing a data-driven empirical calendar worked out through observation and later mathematical algorithms. Apart from its calendrical model, MUL.APIN also employed a simple if not particularly accurate numerical scheme for charting the length of day and night throughout the year (Hunger and Steele 2019: 11-12). In addition to astronomical observations, MUL.APIN incorporated predictions in the form of celestial omens (ibid. 4), which shows a similar mixing of genres, in common with BAM 1. Two other aspects of MUL.APIN are relevant to the present discussion. Although the rather crude schematics of the text were rendered virtually obsolete by later advances in mathematical astronomy and discovery of the zodiac, MUL.APIN continued to be copied and studied even into the Seleucid period (ibid. 15).<sup>40</sup> On the other hand, it was not meant for strictly academic enjoyment, since MUL.APIN continued to have practical applications, especially those sections dealing with intercalation and visibility of the moon (ibid. 14). All of these features measure up quite well in comparison with BAM 1, which existed side-by-side with complex therapeutic prescriptions, containing much more detailed information regarding symptoms, medical ingredients, and the administration of drugs. Nevertheless, tablets based on the format of BAM 1 continued to be composed in later periods.<sup>41</sup> The purpose of a *Vademecum* was not to reproduce in an abbreviated form the data from therapeutic recipes, but rather to create a simplified scheme for assigning the application of drugs to various diseases and symptoms, based on limitations regarding how the drugs (usually plants) were to be treated and administered.

By thinking of BAM 1 as a form of schematic modelling of Babylonian medicine, rather than as a carefully chosen selection of extracts drawn from actual recipes or prescriptions, one solves three important puzzles presented by this text.

First, the fact that BAM 1 is so eclectic in its choices of diseases and drugs cannot be explained by conventional logic. For a *Vademecum* or handbook to be of any practical use (like a *Physician's Desk Reference*), one would expect to find a head-to-foot systematic treatment of diseases and drugs used to treat them. Instead, BAM 1 lists some diseases in a seemingly random order with a mixture of common and rare drugs, with only the bare minimum of details regarding how drugs are administered.<sup>42</sup> Second, although some sections of BAM 1 have remarkably similar parallel passages in therapeutic recipes, nothing is precisely duplicated, even when the same diseases and similar drugs and instructions are listed. So far, there is no evidence that BAM 1 was actually citing or excerpting precise data from other texts.

<sup>40</sup> Other studies have shown that it served as a model for Aramaic astronomy, in texts such as Enoch (Drawnel, 2011: 402-405).

<sup>41</sup> Apart from duplicates noted in Attia-Buisson 2012 (JMC 19): 25, one Late Babylonian version of the *Vademecum* (BAM 380 = BE 13623+) stands out as a parallel but not duplicate pharmacological handbook, perhaps patterned after BAM 1 but with a different selection of drugs, diseases and instructions. Nevertheless, the schematic logic of the text is similar to the Assur handbook.

<sup>42</sup> Francesca Rochberg notes (personal communication) that the minimal details in column three of BAM 1 might reflect astronomical models that skip dates or positions which can theoretically be interpolated from the numbers in the text.

To a certain extent, one might expect medicine to be an exact science in which the same drugs would be employed against the same illnesses, but this does not yet appear to be the case. Third, appending Šumma ālu omens to the end of the text is far from orthodox, since genres are usually clearly delineated in Akkadian *Wissenschaften*. The omens, however, function well as part of an analogous modelling scheme, since they provide additional theoretical data regarding the drugs listed in the first column of BAM 1, without describing the effects or even side-effects of the drugs.

The main point about modelling (based on astronomical analogies) -- as distinguished from catalogues or lists or omens, etc. -- is that scientific models normally represent abstract data, formulated through mathematics. In the case of medicine, for which mathematics is irrelevant, there is nevertheless an abstract aspect to BAM 1 which is atypical and highly unusual, with the logic being: 'A is to B given C'.<sup>43</sup> A selection of simple drugs (A) is to be employed for certain diseases (B), if and only if administered under certain conditions (C). The difference between BAM 1 and numerous therapeutic recipes is that the information in column three of BAM 1 does not represent instructions but guidelines for treatment, and hence qualifies as schematic. All three columns taken together form an interdependent logical framework.

This view of BAM 1 as an example of abstract modelling can encounter objections. One possible hurdle is to explain the presence of a 'forerunner' KADP 1, column 5-6, discussed above, which does not duplicate BAM 1 but shows a somewhat rudimentary form of a Vademecum, similar enough to be comparable. The question is whether such forms of abstract thinking we are attributing to BAM 1 can be comfortably placed back into the second millennium BCE.<sup>44</sup> If one returns to the examples from the field of astronomy, we know that some parts of what later became Enūma Anu Enlil were known to Middle Assyrian scribe-scholars.<sup>45</sup> With these as examples in mind, it should not surprise us to find a precursor to BAM 1 in a Middle Assyrian composition. Nevertheless, without mounting a teleological argument for 'progress', it is fair to point out that the specific example of the earlier vademecum, KADP 1, does not demonstrate quite the same logic or level of abstraction as that of the later Neo-Assyrian text. A cursory comparison between KADP 1 and BAM 1 shows some revealing differences between the two texts. First, KADP 1 appends its vademecum to a plant list, but it is not of primary interest to the compiler(s) of the text. Second, the purpose of KADP 1 appears to be concrete rather than abstract, in listing the same drugs on the left column with their corresponding ailments and other data relevant to their uses. Several instructions in KADP 1 state that the drugs are to be administered on the last day of the month, which is not often found in therapeutic recipes, or alternatively, that drugs could be employed against conditions not always associated with medicine, such as wild beasts (*nammaššu*)<sup>46</sup> or against magical practices not to be employed in a man's house. On the other hand, some instructions in KADP 1 appear to be *sui generis* rather than simply copied from recipes, such as the following (col. v 42-44):

<sup>43</sup> An alternative formulation might be: Item A (drug) can *only* relate to Item B (disease) under condition C (instruction).

<sup>44</sup> Irving Finkel reminds me of the often-made observation that in the field of Mesopotamian law, the law codes (such as Codex Hammurabi) were theoretical legal models which existed alongside common law, as known from legal documents and court cases. The law codes were never cited in legal cases.

<sup>45</sup> See Heeßel 2018: 255-260. Although Heeßel concludes that no recension of EAE can be securely identified from second millennium sources, it is nevertheless the case that isolated second millennium BCE manuscripts resembled what later became known as EAE. In other words, one cannot prove a Middle Assyrian 'Series' of EAE, but parts of the text were known in some form, whether labelled as EAE or not.

<sup>46</sup> See l. 15: Ú NÍG.KI.A ina É NA NU.GÁL *sà-ku ana* U[GU] É NA *su-lu-hu*, 'drug for wild animals not to be found in a man's house, to pound, to sprinkle the surface of the house.'



Ú *at-kam* Ú MURUB.MEŠ GIG *sà-ku ana* A.MEŠ PÚ ŠUB  
*ina* IM.ŠU.RIN *se-ke-ru* MURUB.MEŠ *muš-šu-u* GAZ MURUB.MEŠ LÁ  
 drug *atkam* drug for sore hips, to pound, to put into well-water,  
 to heat in an oven, to massage the hips, to crush, to bind the hips

The formulation of this entry is a combination of common instructions (to pound, to heat in an oven), combined with more atypical uses of well-water and massage-therapy. It does not have the hallmarks of the more theoretical general instructions found in BAM 1, which suggest either internal or external applications.

The comparisons between KADP 1 and BAM 1 are useful guides to determine how a text, such as the *Vademecum*, can percolate over a long period and develop different patterns over time. The abstract modelling of BAM 1 can be detected in earlier phases to a limited extent, but it seems clear that the specifics of the instructions in BAM 1's third column were not as important over time as the general patterns they represented, as general guidelines for the administration of drugs. They were intended as more general than specific, to provide a theoretical framework for the uses of drugs, rather than particular instances for individual cases. The contrast between KADP 1 and BAM 1 does indeed show developments in thinking which indicate changes in how medicine adapted to the intellectual milieu of Assur in the Neo-Assyrian period. This was the same environment which produced the Assur Medical Catalogue and KAR 44, both major achievements.

## Conclusion

It is not an easy task to analyse a cryptic text like BAM 1, which represents the bare bones of medical theory without being fleshed out by helpful explanatory guides from those who composed and used such texts. While operating in the dark, one inevitably makes incorrect assumptions, many of which are discussed in the present study. The initial question raised by BAM 1 is why it was composed in the first place and by whom, conjuring up the paradigm image of a single scribe writing down data at a single point in time. This and other texts could represent cumulative knowledge gathered over generations of experience with drugs and their applications. The second obvious question regards which column is primary and which secondary: is this a text about drugs or diseases? with the usual conjecture being that the instructions were tertiary. In fact, there is no convincing hierarchy of data. Another approach is to search for some internal logic for the sequencing of drugs and diseases, which leads to examining the internal patterns of repetitions among the drugs, to see if multiple references to the same drug might render information about how the listings were ordered. Without any external information to guide us, no real clues emerge. The internal formats, particularly in the use of 'ditto' notations, render some hints regarding the importance of the instructions in column three, since these notations reflect similar patterns in other texts, which might have contributed some data to the *Vademecum*. In the end, if one looks at BAM 1 as three independent columns of data, on drugs, diseases, and instructions, the overall purpose of this text remains elusive.

Once one grasps the importance of abstract modelling within the Babylonian academy, the role of BAM 1 comes much more sharply into focus. The combination of vertical and horizontal rulings indicates from the start that the text is to be read in both directions, both as lists and as individual propositions, grouped into discrete sections. The point about BAM 1 is that it is selective rather than comprehensive in its choices, hence not a catalogue or practical listing of drugs or diseases, nor or these ordered in any easily divined way. Instructions are rudimentary and general, unspecific, and largely unduplicated in therapeutic texts in the form in which they appear. All of these are indications that BAM 1 is something other than an

Uruanna type of plant list: it is likely to be a schematic model, intended to illustrate the theory of the use of medicinal drugs, not the practice.

## Bibliography

- Abusch T., Schwemer D. 2016.** *Corpus of Mesopotamian Anti-Witchcraft Rituals 2*, AMD 8/2, Leiden/Boston.
- Abusch T., Schwemer D. 2020.** *Corpus of Mesopotamian Anti-Witchcraft Rituals 3*, AMD 8/3, Leiden/Boston.
- Attia A., Buisson G. 2012.** BAM 1 et consorts en transcription, JMC 19, 22-50.
- Bácskay A. 2018.** *Therapeutic Prescriptions against Fever in Ancient Mesopotamia*, Münster.
- Beaulieu P.-A., Frahm E., Horowitz W., Steele J. 2018.** *The Cuneiform Uranology Texts, Drawing the Constellations*, Philadelphia.
- Biggs R. 1967.** *ŠA.ZI.GA Mesopotamian Potency Incantations*, Locust Valley.
- Boddy K. 2012.** *The Composition and Tradition of Erimhuš*, CM 52, Leiden/Boston.
- Crisostomo J. 2019.** *Translation as Scholarship, Language, Writing, and Bilingual Education in Ancient Babylonia*, Berlin.
- Drawnel H. 2011.** *The Astronomical Book (4Q208-4Q211) from Qumran, Text, Translations and Commentary*, Oxford.
- Freedman S. M. 2006.** *If a City is Set on a Height, the Akkadian Omen Series Šumma Alu ina Mēlē Šakin*, Vol. II, Philadelphia.
- Freedman S. M. 2017.** *If a City is Set on a Height, the Akkadian Omen Series Šumma Alu ina Mēlē Šakin*, Vol. III, Philadelphia.
- Geller M. J. 2015.** Encyclopaedias and Commentaries, in J. C. Johnson, *In the Wake of Compendia, Infrastructural Contexts and the Licensing of Empiricism in Ancient and Medieval Mesopotamia*, Berlin.
- Geller M. J., Panayotov S. V. 2020.** *Mesopotamian Eye Disease Texts*, BAM 10, Berlin/Boston.
- Heeβel N. P. 2005.** Stein, Pflanze, und Holz, Ein neuer Text zur medizinischen Astrologie, *Orientalia* 74, 1–22.
- Heeβel N. P. 2007.** *Divinatorische Texte I, Terrestrische, teratologische, physiognomische und oneiromantische Omina*, KAL 1, Wiesbaden.
- Heeβel N. P. 2008.** Astrological Medicine in Babylonia, in A. Akasoy, C. Burnett, R. Yoeli-Tlalim (eds.), *Astro-Medicine, Astrology and Medicine, East and West*, Micrologus' Library 25, Florence.
- Heeβel N. P. 2018.** Dating *EAE*. When was the Astrological Series *Enūma Anu Enlil* Created?, in C. J. Crisostomo et al. (eds.), *The Scaffolding of Our Thoughts. Essays on Assyriology and the History of Science in Honor of Francesca Rochberg*, AMD 13, Leiden/Boston, 253-263.
- Hunger H., Steele J. 2019.** *The Babylonian Astronomical Compendium MUL.APIN*, London/New York.
- Köcher F. 1955.** *Keilschrifttexte zur assyrisch-babylonischen Drogen- und Pflanzenkunde*, Berlin.
- Rochberg F. 2018.** Reasoning, Representing, and Modeling in Babylonian Astronomy, *Journal of Ancient Near Eastern History* 5, 131-148.
- Rumor M. 2018.** At the Dawn of Plant Taxonomy: Shared Structural Design of Herbal Descriptions in *Šammu šikinšu* and Theophrastus' *Historia plantarum* IX, in S. V. Panayotov, L. Vacić (eds.), *Mesopotamian Medicine and Magic*, AMD 14, Leiden/Boston, 446-461.

**Schmidtchen E 2018.** Simplicia and Unpublished Fragments of *Alamdimmû* in the British Museum, in S. V. Panayotov, L. Vacín (eds.), *Mesopotamian Medicine and Magic*, AMD 14, Leiden/Boston, 462-500.

**Schuster-Brandis A. 2008.** *Steine als Schutz- und Heilmittel: Untersuchung zu ihrer Verwendung in der Beschwörungskunst Mesopotamiens im 1. Jt. v. Chr.*, AOAT 46, Münster.

**Schwemer D. 2013.** Prescriptions and Rituals for Happiness, Success, and Divine Favor: The Compilation A 522 (BAM 318), JCS 65, 181-200.

**Simkó K. 2018.** *BAM 7 44: Suppositories for Rectal and Gastro-Intestinal Disease*, in S. V. Panayotov, L. Vacín (eds.), *Mesopotamian Medicine and Magic*, AMD 14, Leiden/Boston, 537-555.

**Scurlock J.A. 2014.** *Sourcebook for Ancient Mesopotamian Medicine*, Atlanta.

**Stadhouders H. 2011.** The Pharmacopoeial Handbook *Šammu šikinšu* - An Edition, JMC 18, 3-51.

**Stadhouders H. 2012.** The Pharmacopoeial Handbook *Šammu šikinšu* - A Translation, JMC 19, 1-21.

**Stadhouders H., Johnson J. C. 2018.** A Time to Extract and a Time to Compile: The Therapeutic Compendium Tablet BM 78963, in S. V. Panayotov, L. Vacín (eds.), *Mesopotamian Medicine and Magic*, AMD 14, Leiden/Boston, 556-612.

**APPENDIX BAM 1 translation**NB. Names of drugs repeated in the text are marked in **Bold**.

	<b>Col i</b>	<b>Col. ii</b>	<b>Col. iii</b>
1)	[drug male mandrake ( <i>pillû</i> )] <sup>1</sup> [drug root of male mandrake] [drug green 'cranium-like'(-plant) ( <i>gulgullānu</i> )] [drug <i>lulumtu</i> ]	drug for the sick tooth drug ditto drug ditto drug ditto	to place over his (the patient's) tooth ditto ditto ditto
5)	[drug centipede ( <i>hallulāya</i> )] [drug root of] sun(-plant)	drug ditto drug ditto	ditto ditto
	drug [root] of thistle ( <i>ašagu</i> ) which	the sun has not witnessed when you uproot it	drug against (tooth)worm, ditto
	drug <i>kudimeru</i> drug <i>šibir šīri</i> (MAH)	drug for a knocked out tooth drug for a knocked out tooth	to dry, to pound, to mix in oil, ditto to dry, to pound, to mix in oil, ditto
10)	drug root of thorn-bush ( <i>baltu</i> ) which the sun has not witnessed when you uproot it		drug for a knocked out tooth, ditto
	drug <i>mirišmara</i> drug root of <i>haltappānu</i> , drug root drug resin of <i>šimṭatu</i> , drug resin of <i>baluhhu</i>	drug for loose (lit. weak) teeth of <i>alluzu</i> <sup>2</sup> , drug ditto bitter-aromatic ( <sup>šim</sup> <i>murru</i> ), drug ditto drug ditto	to place over the teeth ditto ditto ditto
15)	drug <i>margušu</i> drug alum ( <i>gabû</i> ), mint ( <i>ninû</i> ),	drug to clean the teeth <i>tūru</i> -aromatic, ditto	you clean the teeth while fasting <sup>3</sup> ditto
	drug shoot of tamarisk ( <i>bīnu</i> )	drug to annul the 'hand of the oath'	to drink on the new moon
	drug seed of <i>kamantu</i> drug seed of <i>atkam</i>	drug for holding seed (semen) drug for holding seed (semen)	to pound, to drink in premium beer to pound, to mix with roasted barley flour in beer dregs, to put into her vagina

<sup>1</sup> The drugs in the first ruled section of column one are restored from CT 14 23 (K 259), as noted in Attia-Buisson 2012 (JMC 19): 32.<sup>2</sup> The second drug appears in column two because of insufficient space in column one. This same pattern is repeated elsewhere, in ll. 12, 16 and 136.<sup>3</sup> *lā patān*, which often alternates with *balu patān*, usually translated idiomatically as 'on an empty stomach'.

20)	drug resin of <i>nuhurtu</i>	drug for stricture of the bladder <sup>4</sup>	to drink in beer, to rub in oil, to blow (through) a tube into his penis
	drug bitter aromatic ( <sup>šim</sup> <i>murru</i> ) <sup>5</sup>	drug for stricture of the bladder	ditto
	drug resin of <i>baluhhu</i>	drug for stricture of the bladder	ditto
	drug shoot of thorn-bush ( <i>baltu</i> )	drug ditto	to pound, to drink in premium beer
	drug <i>imhur-līm</i>	drug ditto	to pound, to drink in wine <sup>6</sup>
25)	drug green <i>azupīru</i>	drug ditto	to pound, to drink in premium beer
	drug Kaniš-oak ( <i>allankaniš</i> )	drug ditto	to pound, to drink in premium beer
	drug garlic ( <i>šūmu</i> )	drug ditto	to pound, to drink in oil or premium beer
	drug <i>hašānu</i> <sup>7</sup>	drug ditto	to pound, to drink in oil or premium beer
	drug <i>šiburu</i>	drug for the gall-bladder	to pound, to drink in premium beer <sup>8</sup>
30)	drug bitumen ( <i>ittū</i> )	drug for the gall-bladder	to pound, to drink in either premium beer or wine
	drug <i>merginu</i> <sup>1</sup>	drug for the gall-bladder	ditto
	drug <i>ka'u</i> -fungus <sup>9</sup>	drug for the gall-bladder	ditto
	drug <i>tullal</i> , tamarisk ( <i>bīnu</i> )-leaf	iron, snake-stone, drug for the gall-bladder	ditto
	drug <i>purupuhu</i> <sup>10</sup>	drug for the sick intestines ( <i>irrū</i> )	to pound, to drink in premium beer
35)	drug root of <i>kurkanū</i>	drug to remove <i>maškadu</i> -disease	to wrap (in) goat wool, to place on a man's neck
	drug shepherd's crook(-plant) ( <i>haṭṭi re'i</i> )	drug ditto	to wrap wool [on a man's neck], to rub on in oil
	drug root of thistle ( <i>ašagu</i> ) root of	[... drug] ditto	to keep rubbing on in oil
	drug resin of tamarisk ( <i>bīnu</i> )	drug for paralysis ( <i>šimmatu</i> )	to wrap goat wool to place on a man's neck
	drug leaf of <i>šunū</i>	drug for an attack of <i>šadānu</i> -disease	to pound, to rub on in oil
40)	drug handle (lit. 'ear') of <i>red</i> thorn-bush ( <i>baltu</i> )	drug ditto	to pound, to rub on in oil

<sup>4</sup> *hiniq ellabuhhi*.

<sup>5</sup> See BAM VII No. 1 ii 23' (p. 36), in which this drug is a *simplicium* for urinary tract disease.

<sup>6</sup> Wine, which occurs relatively infrequently, was used as an alternative to beer (see l. 30). Like beer, it was used as a solvent for drugs because of its alcohol content.

<sup>7</sup> Literally, a 'lung-like' plant.

<sup>8</sup> Cf. Uruanna II 373 ZĒ *mar-tu* Ú *ši-bu-ru* (see also Uruanna II 54, 304).

<sup>9</sup> To be identified with *kammu*-fungus below (l. 131).

<sup>10</sup> Var. *puhpuhu*. See Uruanna II 47, *puhpuhu šá-mi* IZI *lib-bi*, drug for 'internal fever'.

	drug leaf of thistle ( <i>ašagu</i> )	drug for fever ( <i>šētu</i> )	to pound, to rub on in oil
	drug licorice ( <i>šūšu</i> ) <sup>11</sup>	drug for <i>li'ibu</i> -fever	to pound, to rub on in oil
	drug <i>kusipu</i>	drug for <i>hammu</i> -disease	to pound, to rub on in oil
	drug <i>šadānu</i>	drug for an abscess ( <i>ummedu</i> )	to pound, to rub on in oil
45)	drug mint ( <i>nīnū</i> )	drug for <i>stomach</i> <sup>12</sup> -(disease)	to pound, to rub on in oil
	drug green <i>azupiru</i>	drug for the (sick) buttocks	to pound, to rub on in oil
	dru <i>kamūnu</i>	drug ditto	to pound, to rub on in oil
	drug <i>šašumtu</i>	drug for heat stroke ( <i>himiṭ šēti</i> )	to drink in premium beer, to keep rubbing on in oil
50)	drug sailors' excrement <sup>13</sup>	drug for heat stroke	to pound, to rub on in oil
	drug <i>aprušu</i>	drug for heat stroke	to pound, to rub on in oil
	drug leaf of <i>amurdinnu</i>	drug for heat stroke	to pound, to rub on in oil
	drug <i>lipāru</i>	drug for heat stroke	to put (into) fluids, warmed up <sup>14</sup> , to bathe a man
	drug <i>hašū</i> , <sup>15</sup> garlic-plant	drug for heat stroke	to rub on in honey, oil
55)	drug <i>ararū</i>	drug for heat stroke	ditto
	drug <i>šuqdānu</i> <sup>16</sup>	drug for heat stroke	to pound, to rub on in oil
	drug cobweb ( <i>pizzir</i> )	drug for heat stroke	to drink in premium beer, ditto
	drug <i>imhur-līm</i> <sup>17</sup>	drug for heat stroke	to pound, to drink in premium beer, ditto
	drug <i>azallū</i>	drug for depression	to eat and drink on an empty stomach
	drug seed of <i>azallū</i>	drug for the 'face-of-evil'	not to approach a man <sup>18</sup> , to rub on <i>daprānu</i> -juniper in oil

<sup>11</sup> See JMC 19: 35, giving evidence for the logogram NI.NE for *šūšu* 'licorice'.

<sup>12</sup> Reading [*k*]a-aš-ri for *karši*, 'stomach'; see Attia-Buisson 2012 (JMC 19): 36. A similar error occurs below (*im-ih-ru* for *mi-ih-ru*).

<sup>13</sup> *zē malāhi*, one of the few examples of Dreckapotheke in this text.

<sup>14</sup> Restoring <ina> A.MEŠ, with *sekir* 'heated', both referring to the *lipāru*-ingredient being warmed-up and administered in liquid form (court. G. Buisson).

<sup>15</sup> Lit. 'lung'-plant, but the logogram <sup>4</sup>HAR.HAR might also indicate the plant *haltappānu*.

<sup>16</sup> 'almond-like' plant.

<sup>17</sup> A common panacea, 'it treats a thousand' (conditions).

<sup>18</sup> The entry in column two extends into column three, for reasons of spacing.

60)	drug seed of <i>alluzu</i>	drug for ditto	ditto
	drug <i>kamantu</i>	drug for <i>ašû</i> -disease	to pound, to rub on in oil <sup>19</sup>
	drug seed of ebony ( <i>ušû</i> )	drug for <i>ašû</i> -disease	to pound, to rub on in oil
	drug <i>ata'išu</i>	drug for <i>ašû</i> -disease	to fumigate a man
	drug weed ( <i>išbaltu<sub>4</sub></i> )	drug for <i>ašû</i> -disease	to fumigate a man
65)	drug resin of <i>baluhhu</i>	drug for <i>ašû</i> -disease	to wrap wool, to place on the man's neck
	drug <i>kukru</i> -aromatic	drug for 'fleeting' <i>ašû</i> -disease	to pound, to drink in premium beer
col. ii			
	drug <i>urānu</i>	drug for <i>ašû</i> -disease	[ditto]
	drug <i>simat erēši</i> -plant <sup>20</sup>	drug for <i>ašû</i> -disease	[ditto]
	drug <i>šašumtu</i>	drug for <i>ašû</i> -disease	d[itto]
70)	drug <i>dadānu</i> -carob	drug for <i>ašû</i> -disease	d[itto]
	drug seed of <i>kamantu</i>	drug for <i>ašû</i> -disease	di[tto]
	drug <i>kukru</i> -aromatic	drug for <i>ašû</i> -disease	di[tto]
	drug <i>kukru</i> -aromatic, juniper ( <i>burāšu</i> ), <i>kamantu</i> , <i>nikiptu</i> , <i>hūratu</i> -madder, seed of <i>qutru</i> put all of these drugs in oil, cook in a fire, when hot, rub repeatedly onto his head <sup>21</sup>		
75)	drug <i>kamantu</i>	drug for an attack of flatulence <sup>22</sup>	to pound, to rub in oil
	drug <i>hašû</i> , garlic-plant	drug for an attack of flatulence	to drink in honey, oil, or premium beer
	drug fox-vine ( <i>karān šēlebi</i> )	drug for an attack of flatulence	to pound, to keep rubbing on in oil
	drug <i>tarpisu</i> <sup>23</sup>	drug for <i>samānu</i> -disease	to pound, to rub in oil
	drug <i>amhara</i>	drug for <i>samānu</i> -disease	to pound, to keep rubbing on in hot ghee
80)	drug sailors' 'dust', <i>not causing trembling</i> ,	drug for <i>samānu</i> -disease	ditto, you (keep rubbing)
	drug of Mt. Amadanu in premium beer, (or) of Mt. Habhu not dried out <sup>24</sup>		to pound, ditto

<sup>19</sup> Parallels with BAM 494 are explained by Attia-Buisson 2012 (JMC 19): 37.

<sup>20</sup> See Attia-Buisson 2012 (JMC 19): 37, discussing this plant name, 'suitable for cultivating'-plant.

<sup>21</sup> These lines override the three-column format of the tablet.

<sup>22</sup> Akk. *šibit šāri*, 'stroke of wind', referring to wind within the body. This disease is often listed immediately after 'sun-fever' (*himit šēti*).

<sup>23</sup> Hapax.

<sup>24</sup> The entry ignores the divisions between columns one and two.

	drug <i>kurkanû</i>	drug for <i>samānu</i> -disease	to pound, to rub on in oil
	drug <i>pizallūru</i> -gecko	drug for <i>samānu</i> -disease	ditto
	drug <i>kamantu</i>	drug for <i>samānu</i> -disease	ditto
	drug <i>šašumtu</i>	drug for <i>samānu</i> -disease	ditto
85)	drug <i>kamūnu</i>	drug for <i>samānu</i> -disease	ditto
	drug seed of <i>kamantu</i> <sup>25</sup>	drug for lungs	to pound, to rub on in oil
	drug <i>hašānu</i> <sup>26</sup>	drug for lungs	to pound, to consume on an empty stomach
	drug <i>puglānu</i> <sup>27</sup>	drug for lungs	ditto
	drug <i>buṭnānu</i> <sup>28</sup>	drug for lungs	ditto
90)	drug seed of <i>atkam</i> ( <i>aktam</i> )	drug for sick lungs, to pound, to drink in oil on an empty stomach, while his tongue is grasped	
	drug <i>šallapānu</i>	drug for lungs which wheeze	to pound, to drink in premium beer
	drug field clod ( <i>kirbān eqli</i> )	drug for cough ( <i>suālu</i> )	to pound, to drink in oil or premium beer
	drug seed of <i>atkam</i> ( <i>aktam</i> )	drug for cough ( <i>suālu</i> )	ditto
	drug <i>nuhurtu</i>	drug ditto	ditto
95)	drug root of licorice ( <i>šūšu</i> )	drug ditto	ditto
	drug root of <i>šunû</i>	drug ditto	ditto
	drug resin of poplar ( <i>šarbatu</i> )	drug ditto	ditto
	drug <i>andahšum</i>	drug ditto, to drink in honey, oil, or premium beer on an empty stomach (while) his tongue is grasped	
	drug ‘milk-like’(-plant) ( <i>šizbānu</i> ), <sup>29</sup>	drug for cough ( <i>suālu</i> ), to drink in pressed oil on an empty stomach (while) his tongue is grasped	
100)	drug ‘dog’s tongue’ ( <i>lišān kalbi</i> )	drug ditto (for cough)	to drink its squeezed out juices
	drug <i>nuhurtu</i>	drug ditto	to pound, to drink in premium beer

<sup>25</sup> For a comment on these simplicia against lung disease, see Stadhouders and Johnson 2018: 576 and 597, based on comparison with a LB tablet (BM 78963, probably from Borsippa) with similar data on simplicia aimed to treating *suālu* and lung disease. There is little overlap in the choices of drugs between BM 78963 and BAM 1, and the textual formats are different, but the use of simplicia is common to both texts.

<sup>26</sup> Lit. ‘lung(*hašū*)-like plant’ (perhaps thyme), which may be the reason why it is used for lung disease.

<sup>27</sup> Lit. ‘radish(*puglu*)-like plant’

<sup>28</sup> Lit. terebinth(*buṭnānu*)-like plant’ (perhaps pistachio).

<sup>29</sup> See l. 107, where instructions for the same milk-like drug also require grasping the tongue, but in that line, the spacing conforms to the three-column format.



105)	drug seed of field clod ( <i>kirbān eqli</i> )	drug for <i>šiqu</i> -illness <sup>30</sup>	to pound, to drink in ass' milk
	drug <i>takdanānu</i>	drug for <i>šiqu</i> -illness	ditto
	drug 'dagger-like'(-plant) ( <i>patrānu</i> )	drug for <i>šiqu</i> -illness	ditto
	drug <i>andahšum</i>	drug for <i>šiqu</i> -illness	to pound, to drink in premium beer
110)	drug resin of <i>nuhurtu</i>	drug for a man who suffers from scarring <sup>31</sup>	to drink in honey, oil, or beer
	drug 'milk-like'(-plant) ( <i>šizbānu</i> )	drug for phlegm ( <i>hahhu</i> ), <sup>32</sup> on an empty stomach, to drink pressed oil while his tongue is grasped	
	drug root of <i>šūšu</i> -licorice	drug for phlegm	to pound, to drink in premium beer
	drug root of <i>šunû</i>	drug for phlegm	ditto
	drug dog's tongue ( <i>lišān kalbi</i> )	drug for phlegm	to have a man drink its squeezed out juices
115)	drug root of date ( <i>suhuppu</i> )	drug for <i>ahhazu</i> -jaundice	to pound, to drink in honey or oil
	drug <i>šagabegalzi</i>	drug for sick <i>bowels</i> ( <i>takaltu</i> ) <sup>33</sup>	to pound, to drink in wine
	drug marsh-apple ( <i>hašhūr api</i> )	drug for the <i>bowels</i>	to pound, to drink in either beer or in wine
	drug fox-vine ( <i>karān šēlebi</i> )	drug for the <i>bowels</i>	to pound, to rub repeatedly on the man in hot ghee
	drug <i>imhur-līm</i> <sup>34</sup>	drug for the <i>bowels</i>	to pound, to drink in premium beer
	drug <i>imhur-ešrā</i> <sup>35</sup>	drug for the <i>bowels</i>	ditto
120)	drug <i>taramuš</i>	drug for the <i>bowels</i>	ditto
	drug <i>puhpuhu</i> <sup>2</sup>	drug for <i>hidar</i> ('bird-spur'-disease)	to place over the surface of the lesion
	drug <i>kamkadu</i>	ditto	ditto
	drug <i>kasû</i> <sup>36</sup>	ditto	to dry out, to [place] over the surface of the lesion
	drug 'dagger-like'(-plant) ( <i>patrānu</i> )	drug for <i>amurriqānu</i> -jaundice	[to pound, to drink in beer]

<sup>30</sup> The illness *šiqu* may be related to the meaning of this word as a term for irrigation. For an analogous source for this entry, see Šammu šikinšu (Stadhouders 2011 [JMC 18]: 8, 28): Ú LAG GĀNA(*kirban eqli*) MU.NI(*šumšu*) a[na] šī-qi TAR-si(*parāsi*) SIG(*damiq*) HĀD.A(*tubbal*) lu ina [.....] lu ina KAŠ(*šikari*) SAG(*rēšī*) NAG.MEŠ(*ištanatti*)-[ma], 'its name is field clod, good for *šiqu*-disease, you dry it, he keeps drinking (it) either in [...] or in premium beer. It could be possible to restore 'ass's milk' in this Šammu šikinšu passage, since one of the other drugs for *šiqu*-disease in this same passage of AMT 1 107 (*andahšum*) recommends administering the drug in premium beer.

<sup>31</sup> Cf. BAM 578 ii 7 DIŠ NA ZĒ *sah-ha* DAB-su, see Scurlock 2014: 510, 521, 'if bile and scarring affect a person'.

<sup>32</sup> The term is likely to be onomatopoeia for expectorating.

<sup>33</sup> Lit. 'sack', but the exact anatomical designation of this term remains uncertain.

<sup>34</sup> 'It treats a thousand (ailments), a common drug.

<sup>35</sup> 'It treats twenty' (ailments), a common drug.

<sup>36</sup> Now identified as tamarind in JMC.

	drug seed of <i>nabrūqu</i> <sup>37</sup>	drug ditto (for <i>amurriqānu</i> -jaundice)	[ditto]
	drug seed of <i>kūru</i> <sup>38</sup>	drug ditto	[ditto]
	drug <i>šigguštu</i>	drug ditto	[to pound, to drink in pressed wine]
125)	drug root of 'dog's tongue' ( <i>lišān kalbi</i> )	drug ditto	[before sunrise,]
	you dig (it) up,	[you mince (it),	to drink its squeezed juices]
	drug root of <i>šūšu</i> -licorice	drug ditto	[ditto]
	drug [juniper]-aromatic ( <i>burāšu</i> )	[.....]	[to pound, drink in ....]
	drug alum ( <i>gabû</i> )	[.....]	[to pound, put into water, you clarify and make drink(?)]
col. iii			
	drug mint ( <i>urnû</i> ) <sup>39</sup>	drug for rectal-disease <sup>40</sup>	[to mix with fat, to put into his anus]
130)	drug ash-tree ( <i>e'ru</i> )	drug ditto	[to mix with fat, to put into his anus]
	drug fungus ( <i>kammu</i> ) of the leatherworker	drug ditto	[to mix with fat, to put into his anus]
	drug seed of tamarisk ( <i>bīnu</i> )	drug ditto	[to stir, to drink in beer]
	drug root of male mandrake ( <i>pillû</i> )	drug ditto	[to mix with fat, to put into his anus]
	drug <i>gīrgirû</i>	drug ditto	to mix with fat or <i>diluted beer</i> which <sup>41</sup> [.....]
135)	drug <i>ašdānu</i> (var. <i>šadānu</i> )	drug for rectal-disease	[mix with oil] while fresh, [put into his anus]
	drug fresh <i>suādu</i> -aromatic	drug field clod ( <i>kirbān eqli</i> ) <sup>42</sup> , drug ditto	[mix] with [oil, put into his anus]
	drug <i>nīnû</i> -mint, while fresh	drug ditto	in [strong] vinegar
	you prepare a clyster <sup>43</sup>	sprinkle <i>daprānu</i> -oil,	you keep putting (it) into his anus
	drug 'field-drum'-plant ( <i>tibbutti eqli</i> )	drug ditto	to dry out, to pound, to mix with oil, to [put] into [his] anus

<sup>37</sup> See Schmidtchen 2018: 466-467, showing the majority of these drugs listed as simplicia against *amurriqānu* in a LB tablet.

<sup>38</sup> The logogram is usually GI.ZÚ.LUM, lit. 'date-reed', although this entry in BAM 1 reads GI<sub>16</sub> (two GI signs written one over the other).

<sup>39</sup> The copy of BAM 1 for this line reads *ur-nu* SA<sub>5</sub>, 'red mint', but CAD U 235 is probably correct in reading *ur-nu-ú*<sup>1</sup>.

<sup>40</sup> Akk. *šuburru maršu*, 'sick anus'.

<sup>41</sup> Reading *lu hi-qam šá* [.....].

<sup>42</sup> *kirbān eqli*. For reasons of space, this drug was entered into column two but belongs to column one. See ll. 11, 12, and 16 above, for a similar pattern.

<sup>43</sup> Cf. CAD A/1 354-355 (ref. court. G. Buisson).

	drug bitter aromatic ( <sup>šim</sup> <i>murru</i> ) of mountains left kidney,	drug for the <i>split</i> anus <sup>44</sup>	to mix with fat of a male sheep's to put into his anus <sup>45</sup>
140)	drug <i>gīrgirū</i>	drug ditto (for the anus)	ditto (to put into his anus)
	drug <i>gīrgirū</i> to drink in premium beer,	drug for a burning <sup>46</sup> anus to boil in a <i>tamgussu</i> -vessel,	to place on the surface of the lesion, ditto (to put into his anus) <sup>47</sup>
	drug mint ( <i>urnū</i> <sup>1</sup> ) to mix	drug for an anus made burning <sup>48</sup> with fat,	you hold <sup>49</sup> a moth, to put into his anus
	drug a fresh field clod ( <i>kirbān eqli</i> )	drug ditto	ditto (to put into his anus)
	drug <i>būšānu</i> , tongue <sup>1</sup> of the dog <sup>50</sup> in premium beer or	of Ningizibarra (Gula), oil	you mix bran <sup>51</sup> , he should drink (it) regularly <sup>52</sup>
145)	drug 'bitter'-aromatic ( <sup>šim</sup> <i>murru</i> ) of a perfumer <sup>53</sup> drug <i>urānu</i> <sup>54</sup> drug for <i>šaššaṭu</i> -disease	drug for <i>šaššaṭu</i> -disease drug for <i>šaššaṭu</i> -disease	to mix in premium beer, to drink [.....]
	drug <i>šadānu</i>	drug for chronic illness <sup>55</sup>	to mix in beer dregs, to bandage the patient
	drug <i>briars</i> (?) <sup>56</sup> of <i>haltappānu</i>	drug for a <i>dried up</i> lesion <sup>57</sup>	to put onto the surface of the lesion
	drug cucumber ( <i>tigilū</i> )	drug for <i>midru</i> -disease	to mix in beer dregs, to bandage the patient

<sup>44</sup> Reading *šá-tuq* for expected *šatiq*. For other possible solutions to this puzzling notation, see Attia-Buisson 2012 44-45.

<sup>45</sup> The column format was clumsily adapted to accommodate this clause.

<sup>46</sup> *hamṭu*

<sup>47</sup> The clause is artificially divided over the three columns.

<sup>48</sup> DÚR *ha-am-ṭi* DÚ

<sup>49</sup> Reading DAB-*al* as *tukâl<sup>al</sup>*.

<sup>50</sup> This is the drug *lišān kalbi*, punning on Gula's emblematic dog.

<sup>51</sup> Reading DUH (for *tuhhu*) *tu-sam*-<*mah*><sup>he-pi</sup>

<sup>52</sup> The clause is artificially divided over the three columns.

<sup>53</sup> *muraqqū*

<sup>54</sup> See above l. 68

<sup>55</sup> *muṣṣu lazzu* (written *lā-zi*).

<sup>56</sup> Reading *hiš-ut*, 'thorns', which would argue against the uncertain identification of *haltappānu* as thyme. See Attia-Buisson 2012 (JMC 19): 46 for other suggestions.

<sup>57</sup> Reading *muṣṣu nahri*.

150)	drug <i>merrû</i>	drug for <i>midru</i> -disease	ditto
	drug ‘milk-like’(-plant) ( <b><i>šizbānu</i></b> ) drug seed of tamarisk ( <b><i>bīnu</i></b> )	drug for internal heat (fever) which throbs drug ditto	to pound, to rub on in oil ditto
	drug <i>uššultu</i> (-grass) to heat	drug for protuberances ( <i>širū</i> ) <sup>58</sup> in premium beer,	which have dryness ( <i>rišiktu</i> ) to rub on in oil <sup>59</sup>
155)	drug <i>amuzinu</i> drug rose ( <i>urū</i> )	drug for flaccid flesh ( <i>širū tabkūte</i> ) drug for lice ( <i>kalmātu</i> )	to heat in premium beer, to bathe the man not to be present on a man’s body
	drug (by) eating <i>šumuttu</i>	impotence	will diminish
	drug <b><i>azallû</i></b>	ditto (to reduce impotence and)	not to have depression
	drug head of a raven	you boil and give to eat,	its form is to be evacuated <sup>60</sup>
	drug head of a white raven	you boil and give to eat,	to brighten his eyesight
160)	drug leek ( <i>karašu</i> )	coriander ( <i>kisibirru</i> ),	which the one whose eyes are sick is not to eat
	drug turnip ( <i>laptu</i> )	<i>amīlānu</i> (‘man-like’-plant),	which the one whose innards are sick is not to eat

(Šumma ālu Tablet 59, see Freedman 2017: 125-126. Drugs appearing in BAM 1 are marked in bold)

	(If) plants (drugs)	are distressed <sup>61</sup>	– disease of cattle.
	(If) the <b><i>puhpuhu</i></b> (-plant)	is distressed	– disease of cattle.
	(If) <b>dog’s tongue</b> (-plant)	is distressed	– raging of the lion and wolf.
165)	(If) the <b><i>qutru</i></b> -plant	is distressed	– there will be a devastating flood in the land.
	(If) <b>fox-vine</b>	is distressed	– disease of the troops, devastating flood.

<sup>58</sup> For this meaning, see CAD Š/3 117.

<sup>59</sup> The clause is artificially divided over the three columns.

<sup>60</sup> Reading *né-ez-zu bu-na-nu-lšú*<sup>1</sup>.

<sup>61</sup> Reading *a-dīr*. The translation 'distressed' is based on Akk *adāru*, 'to fear', with a passive meaning to be the object of worry or fear.

	(If) <i>šarmadu</i>	is distressed	– Šamaš will cause illness in the land.
	(If) <b>leek</b>	is distressed	– there will be <i>di'u</i> -fever in the land.
	(If) <b>garlic</b>	is distressed	– hearts in the land will not be happy.
170)	(If) <b>onion</b>	is distressed	– losses will be caused in the land.
	(If) 'sweet' plant	is distressed	– Adad will devastate the harvest in the land.
	(If) <i>hirišu</i>	is distressed	– obstinacy present in the land.
	(If) a <b>canebrake</b> ( <i>apu</i> )	is distressed	– cattle famine. <sup>62</sup>
	(If) a box-tree ( <i>taškarinnu</i> )	is distressed	– the moon will be eclipsed in the land.
175)	(If) an <b>ebony</b> ( <i>ušū</i> )-tree	is distressed	– Adad will devastate the harvest in the land.
	(If) connifers ( <i>terinnu</i> )	are distressed	– Ea will cause an eclipse in the Apsû.
	If <b>licorice</b> ( <i>šūšu</i> )	is distressed	– Ningišzida will cause <i>di'u</i> -fever in the land.
	If figs	are distressed	– there will be <i>di'u</i> -fever in the land.
	If <b>apples</b>	are distressed	– there will be <i>di'u</i> -fever in the land.
180)	If <b>tamarisk</b>	is distressed	– hearts in the land will not be happy
	If a <b>date-palm</b>	is distressed	– hearts of the people will not be happy
col. iv			
	If a <i>šalālu</i> -reed	is distressed	– there will be [..... in the land].
	If a <b>mandrake</b>	is distressed	– the viscera of people will not be in good shape.
	If a <b>thistle</b>	is distressed	– herds will die from <i>ziqtu</i> -pox. <sup>63</sup>
185)	If a <b>thornbush</b>	is distressed	– ditto, [the harvest(?) will] not will not prosper.
	If a cedar-tree	is distressed	– the harvest of the land will not prosper.
	If a cypress-tree ( <i>šurmēnu</i> )	is distressed	– storm-clouds will be darkened in the land.
	If a <b>daprānu-tree</b>	is distressed	– (a god) will abide <sup>64</sup> in the land ..... <sup>65</sup>
	If a <i>mihru</i> -tree <sup>66</sup>	is distressed	– the land: whatever of it will leave.
190)	If an <b>ash-tree</b> ( <i>e'ru</i> )	is distressed	– (a god) will cause unpleasantness in the land.

<sup>62</sup> CAD A/2 200, citing CT 39 9:19 (Alu): *šumma* GI *a-dir* GIŠ.GI *u* <sup>GIS</sup>TIR ZÁH.MEŠ, 'if reeds are distressed, the canebrake or forest is destroyed'.

<sup>63</sup> Reading máš.an[še *ina zi*]q-ti ba.ús. Attia-Buisson 2012: 30 read this line as a corrupt version of the previous line, based on duplicates.

<sup>64</sup> Reading DÚR.RÛ, corresponding to DUR.RU in l. iv 16 below.

<sup>65</sup> The logogram ŠÀxGI<sub>6</sub> is a hapax in BAM 1, here and in iv 16 below.

<sup>66</sup> Written *im-ih-ru*, a tree but rare as a drug (see Uruanna II 500), not attested in recipes.

	If a <b>poplar</b>	is distressed	– there will be no recession <sup>67</sup> in the land.
	If an aromatic <b>kukru</b> -tree	is distressed	– there will be no wealthy ones. <sup>68</sup>
	If <b>kamūnu</b>	is distressed	– there will be no ... in the land.
	If <b>zibū</b> (black cumin?)	is distressed	– ditto.
195)	If <b>šunū</b>	is distressed	– Ištar will set the boundaries of the lands.
	If a <b>dadānu</b> -carob	is distressed	– disease of cats. <sup>69</sup>
	If <i>milled barley</i> <sup>70</sup>	is distressed	– the divine Seven will inhabit the .... <sup>71</sup>
	If a ripe stalk ( <i>lillānu</i> ) <sup>72</sup>	is distressed	– Ereškigal will be feared. <sup>73</sup>
	If a <i>musukannu</i> -tree	is distressed	– the land: whatever of it will leave.
200)	If a green <b>šakkullu</b> -tree	is distressed	– there will be an epidemic <sup>74</sup> in the land.
	If a <i>kiškanū</i> -tree	is distressed	– in the land, mankind is not <i>stricken</i> . <sup>75</sup>
	If a <b>buṭnu</b> -terebinth(-tree)	is distressed	– the land: its fruit will not <i>grow</i> . <sup>76</sup>
	If an <b>oak-tree</b> ( <i>allānu</i> )	is distressed	– the kingship is not all-powerful.
	If a <b>lipāru</b>	is distressed	– there is an omen in the land.
205)	If a <i>kanaktu</i> -aromatic	is distressed	– there will be an epidemic <sup>77</sup> in the land.
	If a <b>canebrake</b> ( <i>apu</i> )	is distressed	– the reeds and forests will be destroyed. <sup>78</sup>

<sup>67</sup> Reading L[ÁL-*f*]i = diminution.

<sup>68</sup> Reading E[N NÍ]G.TUKU NU GÁL-*ši*.

<sup>69</sup> Reading [ŠUB]-*ti* SA.A(*šurānī*), with Attia-Buisson 2012 [JMC 19]: 30; *miqtu* usually refers to cattle-disease, not to cats.

<sup>70</sup> Reading ŠE ÀR, a hapax for *še'u tēnu*.

<sup>71</sup> Reading ŠÀxGE<sub>6</sub> DÚR.RU.

<sup>72</sup> Rare.

<sup>73</sup> Reading <sup>d</sup>NIN.KI.<GAL> '*i-a-dar*.

<sup>74</sup> Reading NAM'.ÚS.MEŠ = Akk. *mūtānu*.

<sup>75</sup> Reading SĪG (*mahiš*) rather than GIŠ.

<sup>76</sup> Reading ÍL(!) instead of MIR, following Attia-Buisson 2012 [JMC 19]: 30.

<sup>77</sup> Reading <NAM.>ÚS.MEŠ for *mūtānu*. See above, l. 201.

<sup>78</sup> See the note above to l. 175.

## Notes on the text

**1-20.** Lines 1-20 of this text are cited elsewhere by the present author as examples of handbook-formulations which are comparable with Late Antique medicine in Aramaic and Syriac sources, see *The Ancient Near East and the Foundations of Europe*, ed. M. Krebernik and S. Ponchia (Münster, 2020), 95-108.

**9.** Lit. 'staff of the high-ranking', similar to 'shepherd's staff'-plant. This drug is not attested in Uruanna, and the Akkadian term *šibru* as a plant name (if not the same as another plant, *šimru*) is not well known. For alternative interpretations, cf. the comprehensive note on this entry in Attia-Buisson 2012 (JMC 19): 32-33. The argument for *šibru* / *šibirru* as 'rue' is based on the similarity of the word to Mandaic *šambra*, Talmud Aramaic *šbr*', and Akk *šibburratu*, but this brings us back to using etymology as the sole means of identifying a drug, à la Campbell Thompson. The alternative solution of 'sceptre' as a colourful name describing the plant avoids the etymology trap.

**24.** Although this drug usually appears together with *imhur-ešrâ*, almost as a companion drug, *imhur-lîm* appears as a simplicium in BAM VII No. 1 i 5' (p. 32) for urinary tract disease.

**31.** The plant *merzinu* (according to Köcher's copy in BAM 1 and the duplicate reading in RA 13 37: 20) is a hapax. While Köcher copied this plant as [ú m]e-[er]-zi-nu, it may be that his copy was influenced by his awareness of the duplicate, and that this name may be an error (i. e. *mergi-na-nu*) for the plant *merginānu* / *mergirānu* (see for convenience CAD M/2 106); the *-ānu* ending is quite common in drug names, indicating 'like', hence the *mergu*-like plant. The identification of the entry with this type of plant is also suggested by the reference in Suālu-disease texts (BAM 578 i 21), *Ú me-er-gi-ra-nu Ú ZÉ ina KAŠ NAG*, 'drug: *mergirānu*, gall-bladder drug, to drink in beer' (cited above). The other possibility is that the plant *merzinu* is indeed a hapax and has nothing to do with *merginānu*, or that both manuscripts copied this drug from a common faulty Vorlage.

**29-34.** An alternative possibility is that the symptom refers to 'bile' (*martu*), noting that 'bile' is a major cause of disease within Greek medicine, as one of the four humours.

**33.** The drug *tullal* occurs as a simplicium for a penis-related condition, see BAM VII No. 9 iii 4', and together with tamarisk in a recipe (ibid. No. 31 8'; No. 45 9') for *maškadu*-disease, which appears in l. 35.

Shavings of iron (<sup>na4</sup>AN.BAR = *parzillu*) were used in recipes such as in potency massage-remedies (see Biggs 1967: 18 No. 2:9, cf. CAD P 214-215 for other examples), as was a 'snake stone' (NA<sub>4</sub> MUŠ = *aban šēri*, CAD Š 150). Cf. STT 108: 32 (Abnu šikinšu, edited in Schuster-Brandis 2008), 27: NA<sub>4</sub>(*abnu*) GAR-šú(*šikinšu*) GIM(*kāma*) KUŠ(*maški*) MUŠ(*šēri*) NA<sub>4</sub>(*aban*) MUŠ(*šēri*) [MU.NI(*šumšu*)], 'a stone, its properties like snakeskin, [its name] being "snake-stone".' Another possibility for AN.BAR MUŠ could be 'snake iron', corresponding to a plant called *kisât šēri*, 'snake-binding'(-plant); for convenience, see CAD K 420. See also Attia-Buisson 2012 (JMC 19): 34-35.

**35.** The plant *kurkanû* appears as a simplicium against *maškadu*-disease in BAM VII No. 45 rev. 10', and it appears in Šammu šikinšu (Stadhouders 2011 [JMC 18]: 22 §26 as a remedy for *maškadu*-disease: *Ú kur-ka-nu-ú MU.NI(šumšu) Ú(šammu) maš-ka-di ZI(nasāhi)*, '*kurkanû* is its name, a plant to remove *maškadu*.'

**44.** The *ummedu*-abscess is written [u]m-ma-dí, but a duplicate (STT 92 ii 17) reads *um-me-di*, which is the more conventional orthography for this ailment. See the comment in Bácskay 2018: 41.

**46.** Akk. *qinnatu* is not elsewhere associated with illnesses (i.e. sick buttocks) in therapeutic recipes. The usual expression is that one has a sick anus (*šuburru maršu*), see ll. 129-143.

**48.** For *himiṭ šēti*, see Bácskay 2018: 176-210. It is important to note that this type of fever (*himiṭ šēti*) was associated in various texts edited by Bácskay with a number of other ailments, namely flatulence (lit. 'blast of wind'), *šimmatu* and *rimûtu* paralyses, *šaššaṭu*-disease, 'hand-of-the-ghost'-disease, 'hand-of-the-oath'-disease, 'hand-of-mankind'-disease, and any (other) disease', all listed in various manuscripts in a standard fixed order. None of the other conditions associated with this kind of fever are listed in BAM 1.

**56.** *Pizzir*: Cf. Attia-Buisson 2012 (JMC 19): 36, suggesting an alternative reading of *uzun šēri*, 'snake-ear'(-plant). The 'cobweb' plant is also known in Uruanna II 52, 61, and elsewhere, as *pinzir* / *pizzir*, used as a drug to combat anxiety.

**58-60.** The drug *azallû* and its seed appear in a compound recipe (BAM VII No. 50: 15). Note the alliteration between *azallû* and the rare drug *alluzu*, which also appears as an alternative drug in l. 12.

This section contains one of few references in this text to illness caused by magic or sorcery (IGI.HUL, literally 'evil face / eye'), sharing the same drug as used against depression.

**66.** The aromatic drug *kukru* also appears in l. 72 for *ašû*-disease, indicating that the same drug can be used for two similar diseases or phases of the same disease. In this case, the unidentified *ašû*-disease is qualified as being 'fleeting' (*muttaprišu*, lit. 'flying').

**81.** The descriptive comment on Drekapotheke 'sailor's dust' (SAHAR *ma-la-hi*) in Col. 1 is *la* [GÁL]-*šú rat-te*, with the signs being interpreted as derived from *ratātu*, 'to tremble' (CAD R 218). See Attia-Buisson (JMC 19 38) for a different reading of the phrase (as *šika gurun-šú súd-te*), with various possible interpretations. Col. 3 reads KI.MIN (= SÚD *ina* Ī.NUN) *tu-<sup><</sup>paššaš<sup>></sup>*, 'to pound, you keep rubbing on in hot ghee', giving a variant reading with the verb 'to rub' in the standard form typical of recipes. Attia and Buisson 2012 (JMC 19): 38, suggests reading *te* for this sign rather than *tu*, based on photos, but Köcher's copy shows a clear *tu*-sign, although one does not usually see a 2.p.s verbal form in this column of BAM 1.

**82.** The drugs against this disease come from mountains, with two mountains mentioned by name as alternatives. See Attia and Buisson 2012 (JMC 19): 39, for a detailed discussion of this line, with alternative possibilities for interpretation, all of which are rather complex, e.g. reading *ina bi-riš* 'at the side of' instead of *ina* KAŠ SAG, 'in premium beer', or reading *la ud-du-rat* 'not darkened', instead of *la* HÁD.DU SÚD, 'not dried', 'to pound'. A text like BAM 1 is unlikely to be overly esoteric and the simplest readings are likely to be the correct ones. Hence, the present interpretation opts for alternative designations of a mountain drug from two possible provenances, with slightly different applications (either given in beer or not dried), with the instruction SÚD (*sáku*) belonging to column three, following previous lines, then followed by KI.MIN, 'ditto'.

**84.** The logogram for the *pizallūru*-gecko is Ú ANŠE KASKAL-*na* (lit. 'crossroad-donkey'), which could refer to the use of the gecko as a medical ingredient, or to leaf upon which the gecko likes to reside, as noted in an explanatory lists of drugs (see Geller 2015: 36).

**88.** An entry for lungs can be found in Šammu šikinšu (Stadhouders 2011 [JMC 18]: 14, 102'), for which the common plant *kukru* is prescribed both for *agubbû*-chills and alternatively for the lungs, to be administered by drying, pounding, and given on an empty stomach.

**102.** The drug *lišān kalbi* appears in a simplicium for urinary-tract disease (BAM VII No. 1 ii 13' [p. 36]), but with different instructions for administering the drug, which may be the reason why it is not listed elsewhere in BAM 1.

**104.** The illness *šīqu* may be related to the meaning of this word as a term for irrigation. For an analogous source for this entry, see Šammu šikinšu (Stadhouders 2011 [JMC 18]: 8, 28): Ú LAG GÁNA(*kirban eqli*) MU.NI(*šumšu*) *a[na] ši-qi* TAR-*si(parāsi)* SIG(*damiq*) HÁD.A(*tubbal*) *lu ina* [... *lu ina* KAŠ(*šikari*) SAG(*rēštī*) NAG.MEŠ(*ištanatti*)-[*ma*], 'its name is field clod, good for *šīqu*-disease, you dry it, he keeps drinking (it) either in [...] or in premium beer.' It might be possible to restore 'ass's milk' in this Šammu šikinšu passage, based on this parallel in BAM 1.

**114.** Although CAD Š/1 61-62 identifies *šagabegalzi* as a Kassite plant, with no further explanation, the name of the drug could be a Sumerian loanword (*ša-ga-bé gal-zu*), meaning 'wise regarding its innards', a suitable name for a drug to treat bowel-disease.

**118.** Cf. Uruanna III 319-320, identifying one logogram for the drug *puhpuhu* as Ú MAH, although this drug is usually written out syllabically. Another lexical list gives the logogram for this drug as Ú.NUNUZ<sup>sar</sup> (Practical Vocabulary Assur 84, see CAD P 485). The drug might be identifiable with *purupuhu* (l. 34 above), a drug for intestinal disease. On the other hand, the drug is to be applied here externally, as explained in the third column of this entry.

The pathology indicated by *hidar* appears to be variant of *handūru*, a 'spur' belonging to birds, written *hi-dar* MUŠEN(*iššūri*), an obscure designation of a disease, so far only attested in lexical passages. Another lexical text of similar content, BAM 421: 24 (see for convenience CAD H 182), reads, Ú *ša-mi* GIG *hi-dar* MUŠEN, 'drug: a plant for the disease 'bird-spur'; the drug being identified in this way is lost, and this gets us no closer to an identification of the type of disease. One possibility is that it is a tarsal spur on the human foot, which might resemble the type of spur common to the feet of many birds.

**119.** Šammu šikinšu (Stadhouders 2011 [JMC 18] 17 §7) recommends the use of the drug *kamkadu* against a lesion which exudes sweat, which is to be applied to the surface of the lesion: Ú *ka* MU.NI(*šumšu*) *ana* GIG(*simmī*) *ša* IR(*zu'ta*) ŠUB-*ū(inaddū)* SIG<sub>5</sub>(*damiq*) SÚD(*tasāk*) *ana* IGI(*pān*)



GIG(*simmi*) ŠUB-*di(tanaddi)*, 'its name is *kamkadu*, good for a lesion which exudes sweat, you pound (it) and apply it to the surface of the lesion.'

**121ff.** These and the following lines are restored from duplicates, RA 13 25f. and STT 92 ii (see Attia-Buisson [JMC 19]: 25 for a full list of duplicates).

**124.** Cf. the parallel passage in STT 92 ii 6, *Ú šim-gu-uš-ti GIŠ.SAR SIG<sub>7</sub>' : Ú amurriqānu : saku ina Ī.GIŠ GUD NAG*, 'The fresh garden drug *šigguštu* : a jaundice-drug: to pound in ox-fat and make (one) drink'.

**127.** This and the following entry are restored by Attia and Buisson 2012 (JMC 19): 42 from BAM 578 iii 11-12, giving instructions for using the same drugs against the same disease, *amuriqānu*-jaundice (see Scurlock 2014: 514, 524). It will be useful to see the passage in BAM 578 iii 10-11 in full, to see the degree of correspondence with this section of BAM 1 dealing with this particular ailment:

*únam-ruq-qa SÚD ina KAŠ NAG únam-ruq-qa SÚD ina A NAG*  
IM.SAHAR.NA<sub>4</sub>.KUR.RA(*gabú*) ina A.MEŠ ŠUB *tu-zak* NAG<sup>sim</sup>LI(*burāšu*) SÚD ina GA NAG,

'you pound *namruqu* (*nabruqu*), you (have one) drink in water, you put alum in fluid, you clarify, you (have one) drink, you pound juniper, you (have one) drink in milk.

**129.** See Šammu šikinšu (Stadhouders 2011 [JMC 18]: 8: 33 and 11: 67, in which drugs for rectal disease are also mixed with fat and put into the rectum, which helps restore column three of this section.

**139.** The same drug (<sup>sim</sup>*murru*) is also deemed to be beneficial for the anus in Šammu šikinšu (Stadhouders 2011 [JMC 18]: 25, §4 and §5: <sup>sim</sup>ŠEŠ(*murru*) šum-[šú] ana DÚR(*suburri*) SIG(*damiq*), '*murru* is its name, it is beneficial for the anus.'

**144.** See Attia-Buisson 2012 (JMC 19) 45-46, citing various interpretations of this phrase, but the present translation assumes simplest explanation as most likely. The healing goddess Gula is often depicted with her dog, whose saliva might have been thought to have healing properties.

**151.** Col. 2 reads: *ummi* (KÚM) *libbi* (ŠÀ) *šá tebû* (ZI), which is a designation of symptoms rather than a disease. See also Attia-Buisson 2012 (JMC 19): 46, citing BAM 421 i 31', in which the same drug (*šizbānu*) is employed against the same symptoms (KÚM *lib-bi* ZI).

**156.** Reading ŠÀ.ZI.GA or *nīš libbi* for 'sexual potency', which actually refers to ritual recipes to treat male impotence. The term *nīš libbi* or 'sexual potency' actually refers to the lack of this condition, i.e. impotence. An entry for impotence (ŠÀ.ZI.GA) occurs in Šammu šikinšu (Stadhouder 2011 [JMC 18]: 11, 71', although the name of the drug is lost.

**158.** The head of a raven (*qaqqad āribi*) is fairly common in medical recipes, cf. for convenience CAD A/2 266, and it also appears in A 522 = BAM 318 ii 3, see Schwemer 2013: 186. In the Syriac Book of Medicine, the head of black raven (*rš' d'wrb' 'wkm*) was also used, but only for its brains (*mwh* = Akk. *muhhu*).

**159.** This line appears to allude to an Assur text (A 522 = BAM 318 iii 19, now Schwemer 2013: 181-200), as noted by Attia-Buisson 2012 (JMC 19): 47. The Syriac Book of Medicines recommends applying the liver of a raven for the white of the eyes (*kbdh hšyh lhwr' d'yn'*), which might also reflect the idea of brightening the eyes. The Syriac text also lists the egg of a white raven (*b' d'wrb' blq'*) as one of series of *simplicia* used to improve the condition of 'whiteness of eyes' (*lhwr' d'yn'*).