Theriac Recipes (*Dar ya kan*) as the Ultimate Cure Against Epidemics in Two Tibetan Medico-Alchemical Collections of the Thirteenth and Fourteenth Centuries[1]

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Medical and alchemical knowledge has been transmitted over centuries in the form of recipes preserved in textual sources.[2] In the history of Eurasian pharmacology, theriac represents one of the most poignant paradigms for the transfer and transformation of medical and pharmacological knowledge across epochs and cultures. This highly esteemed medical compound dates to the Hellenistic Era and was designated in antiquity as the prime antidote to bites from venomous animals and inanimate poisons. It was modified and reformulated over the centuries until it achieved the status of a universal panacea, spreading to Central Asia and then to East Asia.[3]

[1] The project "Indagine storico filologica delle fonti tantriche e mediche tibetane sulla cura delle malattie epidemiche e dei veleni tra il X e il XIX secolo" (Historical and Philological Analysis of Tibetan Tantric and Medical Sources on the Cure of Epidemics and Poisons) is being conducted at the University of Napoli L'Orientale thanks to a research grant (2021/02–2025/01). I am grateful to the Khyentse Foundation, USA, which funded this research project and the writing of this paper.

[2] On recipe as epistemic genre, see Pomata 2013. An excellent volume on the circulation of medical and alchemical remedies and practices among cultures is Lennart and Martelli 2017. Ronit Yoeli-Tlalim has worked extensively on this subject, publishing numerous articles; see her recent book (Yoeli-Tlalim 2021). Several Tibetologists and anthropologists have published historical and anthropological works on pharmacopeia and pharmacology that align with this approach (Czaja 2017, 2019a, b; Gerke 2018; Maurer 2017).

[3] One of the earlier antidotes to poison was known as the Mithridatic recipe because it was elaborated by Mithridates Eupator IV (123–63 BCE), king of Pontus. Its original formula cannot be reconstructed with certainty because all sources at our disposal date from the first century CE and describe diverse recipes. Most probably, when Lenaeus (c. 95–25 BCE) translated Mithridates's treatises on pharmacopeia into Latin, he kept the actual remedy secret. All the received formulas were developed by other authors who established their own traditions, keeping some ingredients, adding others, and establishing what can be considered Greco-Roman polypharmacy. For a detailed discussion of Mithridates's recipe, see Totelin 2004. In the first century, Nero's physician, Andromachus, created the famous *Galena* by adding viper flesh to the Mithridatic compound, an ingredient

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This study contributes to the broader history and epidemiological context of theriacs during the thirteenth and fourteenth centuries through the analysis of Tibetan sources attesting to the presence of complex compounds known as theriac (*dar ya kan*). It is part of an ongoing project on the history of theriacs and alexipharmacs in the Tibetan medical system.[4]

Starting with a concise review of the current state of the field and early Tibetan medical texts on theriacs, it focuses on the analysis of recipes preserved in the *Great Vase of the Amṛta of Immortality* (*'Chi med bdud rtsi bum chen*; hereafter *Vase of Amṛta*)[5] and the *Great Measure of Gold, Pith Instructions of the Brang ti Medical Lineage* (*Brang ti lha rje'i rim brgyud kyi man ngag gser bre chen mo*, hereafter *Measure of Gold*).[6] These early medical sources are arranged chronologically, and their analysis addresses the changing notion and identification of theriac in the target culture from the tenth to the twelfth century.

The two main sources were selected for the following reasons. Throughout the centuries, direct and indirect quotations of entire sections from the *Vase of Amṛta* were integrated in later medical collections. Therefore, its role in the codification of pharmacological recipes and procedures, as well as rituals that became part of the canonical literature, principally represented by the *Four Tantras* (*Rgyud bzhi*, twelfth to fourteenth century), is widely attested.[7] To date, the authoritativeness of this source has been probed especially with regard to finding etiological explanations and cures for recent pandemics such as COVID-19.[8]

Moreover, crucial for the purpose of the mentioned project is to take part in the historiographical debate on the role of tantric medicine in general and in particular of Nyingma and Bön literature in the development of Tibetan medical thought, which, as we shall see, are interrelated in this source.

The *Measure of Gold* was largely redacted by Pelden Gyentsen (Dpal

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that became distinctive of theriac thereafter. His theriac was highly valued by Galen of Pergamon (129–201 CE), to whom major works on toxicology and antidotes are ascribed: *De Antidotis* I, *De Antidotis* II and *De Theriaca ad Pisonem*. Adromachus's recipe was indeed the basis for Galen's theriac. On the pivotal role of Adromachus's recipe in Galen and in the history of theriac itself, see Boudon-Millot 2010, 261–70. For further inquiry into later elaborations of theriacs by the Byzantines, in Syriac literature, in important works ascribed to Persian and Arab authors, and its apogee in Western medical traditions, see Boudon-Millot and Micheau 2020.

4 See note 1.

5 *'Chi med bdud rtsi bum pa* [1] (Padmasambhava 1980); and *'Chi med bdud rtsi bum pa* [2] (Padmasambhava 2006, 1–193).

6 *Gser bre chen mo* (Dpal ldan rgyal mtshan 2005).

7 Simioli 2016, 2019.

8 See Arya and van der Valk 2020.

ldan rgyal mtshan) of the Drangti (Brang ti) family, a medical lineage that in the thirteenth and fourteen centuries was favored and supported by the Sakya school and the Mongols during the Yuan protectorate over Tibet.[9] This medical anthology is significant for tracing the history of Tibetan toxicology.

In the following, I shall address several issues, including the general contents of the sources, their literary context, and encoded terminology. A significant part of the contribution will be devoted to the description of potencies and medico-alchemical uses of theriacs that are designated as primary antidotes to severe conditions and diseases classified as febrile disease (*rims nad*) and *nyen* disease (*gnyan nad*). Far from being exhaustive, this research intends to establish the basis for a future in-depth comparative analysis that might trace the interrelations of Tibetan theriac formulas with other pharmacological and alchemical traditions.

1. Theriacs in Tibetan Sources from Dunhuang to the Yuan Era (Ninth to Fourteenth Century)

The circulation of *materia medica* and medical knowledge along the hubs of the Silk Roads have been traced by historians and scholars of medicine since the beginning of the twentieth century. Berthold Laufer pointed to the relevance of Chinese sources in the reconstruction of Sino-Iranian interactions and the role of Middle Persian in the transmission of medical knowledge in Central and East Asia.[10] In his study of the *Haiyao bencao* 海药本草[11] and in his work on the transmission of Persian medicine into China,[12] Chen Ming discusses the nature of foreign simples, including theriacs (*diyejia* 底野迦), which were classified as medicines from the Western territories of Da Qin (formerly the Eastern Roman Empire of Byzantium, then the Abbāssid Empire). The historical records offer evidence of the introduction of a theriac remedy from the Western Empire of Rum that was offered as tribute to the Tang Emperor.[13] Moreover, in the Song's *Illustrated Classic of Materia Medica* (*Bencao tujing* 本草圖經), theriac is associated with cow or ruminant bezoar, and some variants are described as red

[9] On the Sa skya medical house, see McGrath 2023.
[10] Laufer 1919.
[11] Chen 2007, 254–55.
[12] Chen 2007, Stanley Baker 2022, 475–92. The remedy was mistranslated in Chinese pharmacopoeias as pig gall. See Nappi 2009, 746. For further inquiry, see also Gerke 2021, 240–42.
[13] Schafer 1985, 184.

or black compounds.[14] The transfer of medical knowledge also encompassed medical practices, as it has been attested that, already in the ninth century, new ophthalmic techniques were introduced by Nestorian physicians of Syriac origin.[15]

Syriac and Persian indeed played a pivotal role as intermediary languages in the transmission of alchemical[16] and medical sources during the beginning of the Abbāssid Greco-Arabic translation movement (eighth to the tenth century).[17] This included galenic treatises such as *De Antidotis I*, *De Antidotis II*, and *De Theriaca ad Pisonem*,[18] as well as Sanskrit sources (*Carakasaṃhitā*, *Suśrutasaṃhitā*, *Aṣṭāṅgahṛdayasaṃhitā*, *Siddhasāra*), which were translated directly or from Pahlavi into Arabic.[19]

The earlier phase of formation of the Tibetan medical system was similarly characterized by the translation and reception of foreign materials. This is demonstrated by the compositional formation, the structure, the presence of loanwords of diverse linguistic provenances, and toponyms that distinguish Tibetan medical manuscripts and collections compiled before the *Four Tantras*.

Christopher Beckwith, Ronit Yoeli-Tlalim, Dan Martin, Henk Blezer, and others have researched this medical literature, publishing remarkable contributions dealing with Greco-Persian and Arabic recipes, theories, and diagnostic methods in Tibetan medicine.[20] Our literary excursus shall start from this literature, where we find the earlier references to theriacs.

The word *dar ya kan*, whose etymology was reconstructed on the base of the Persian *tiryāq* or the Arabic *diryāq*,[21] is first mentioned in the Dunhuang manuscript IOL tib J 756 (mid-ninth to tenth century) as part of a long section on antidotes to poisons, which includes the use of snake meat cooked with salt.[22] Similar recipes are found in Byzantine sources such as the *De remedies* by Théophanes Chrysobalantes (tenth century).[23] In this section, theriac is used as a

14 Chen 2019.
15 Chen 2007, 255.
16 On the most recent trend of this research, see Martelli 2017, 326–42.
17 On the Greco-Arabic translation movement, see Gutas 1998. On Persian, Syriac, and Sanskrit materials in Rhazes, see Kahl 2015.
18 See note 3.
19 See Gutas 1998 and Kahl 2015.
20 Beckwith 1979, 1980; Akosay and Yoeli-Tlalim 2007; Akosay, Burnett, and Yoeli-Tlalim 2011; Martin 2011; Yoeli-Tlalim 2010, 2013, 2021; Blezer 2019.
21 On theriac in Tibetan medicine, see Beckwith 1980, 49–51; Yoeli-Tlalim 2013.
22 IOL TIB J 756, ll. 419–20. After having severed the head and tail of a snake, the meat taken from the central part of the body is finely mashed and cooked with white salt. On theriac, see IOL TIB J 756, l. 432.
23 Guardasole 2020, 158–59.

remedy to counteract deer meat poisoning. Luo Bingfen[24] identified it as either pepper weed[25] or prickly blue poppy.[26]

Scant references to theriacs are preserved in the *Yellow Book* (*Po thi kha ser*)[27] ascribed to Biji Tsen Pashilaha (Bi ji Tsan pa shi la ha), a court physician, who, according to the historiographical tradition, was a holder of medical knowledge from Rum (Phrom). Its chapter on the cures of skull injuries and craniotomy (*mgo rma gso ba'i thabs*) prescribes a topical essence-remedy (*rtsi sbyor*) made of white and red theriacs, goldthread,[28] wallflower,[29] Himalayan spurless columbine,[30] white gentian,[31] cinnabar, unspecified animal bile (most probably bear bile), felwort,[32] pig's head-like rock,[33] chalcedony,[34] and *Corydalis*[35] to cure wounds, bones, and some sort of indurated wounds or scrofulous swellings (*rmen bu*) and to enhance the growth of new flesh (*sha'u skyed*) under a healing wound.[36] In this case, theriacs could be simple drugs or compounds. Theriac occurs again as a remedy for diarrhea caused by hepatic fever (*mchin tsha 'khru*); it is administered alone in cold water or boiled with copper oxides (*zangs g.ya'*) and copper sulfate.[37]

The Medical Treatments of the Lunar King (*Sman dpyad zla rgyal*), a medical collection composed most probably before or during the twelfth century, includes a chapter on the cures of poisonings (*dug nad*

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24 Luo et al. 2002, 176, note 286.

25 *Me tog dar ya kan* (*khrag khrog pa*). *Lepidium apetalum*. Ghimire et al. 2021, 65.

26 In Tibetan *tsher sngon* (*a byag tsher sngon*), identified as *Meconopsis horridula* or *M. aculeata*; Ghimire et al. 2021, 226; Kletter and Kriechbaum 2001, 311–16.

27 Bi ji Tsan pha la shi la 2005, 148/15–19.

28 In Tibetan *ser khrag rkang*, secondary name of *myang rtsi spras*, identified as *Coptis teeta* in Dga' ba'i rdo rje 1995, 264–65.

29 In Tibetan *gser thig*. Dga' ba'i rdo rje (1995, 209–10) identifies this a plant belonging to the genus *Erysimum*.

30 *Yu mo* [*yu mo mde'u byin*]. *Paraquilegia microphilla*. Dga' ba'i rdo rje 1995, 281; Ghimire et al. 2021, 249; Karma chos dpal 1993, 416.

31 *Spang rgyan dkar po. Gentiana stipitata*. Ghimire et al. 2021,192. According to Dga' ba'i do rje (1995, 234–35), it can be identified as *Gentiana szechenyi* or *G. algida*. Karma chos 'phel 1993, 322.

32 *Sum cu tig* [*tig ta*] *Swertia* spp. Dga' ba'i rdo rje (1995, 209) identifies it as a plant of *Saxifraga* spp.

33 *Phag mgo*. Byams pa 'phrin las 2006, 482.

34 *Be snabs* [*bel snabs*]. Dga' ba'i rdo rje 1995, 70.

35 *De ba* [*de wa*]. *Corydalis* spp. Dga' ba'i rdo rje 1995, 221.

36 Bi ji Tsan pha la shi la 2005, 28. Simioli forthcoming.

37 *Sag ram rtsi; mthing zhun* [$Cu\,So_4$]. Byams pa 'phrin las 2006, 732; 929. Dga' ba'i rdo rje 1995, 90. Otherwise called *mtshur sngon or big pan*, which is identified as *Chalcanthitum* [$Cu\,So_4.\,5H_2O$]. Dga' ba'i rdo rje 1995, 176; Karma chos 'phel 1993, 588.

bcos)[38] and an entire chapter devoted to theriacs.[39] In the former, theriac is prescribed as protection against poisons and as antidote to poisons of precious substances (*dbyig dug*). (1.) The protective pills are prepared with theriac of feces,[40] white gentian, fern, turmeric, garlic, iron powder, peacock meat, and bile; (2.) the theriac compound (*dar ya kan gyi sbyor ba*)—no description of the ingredients is given—is enumerated along with other equally effective formulas, such as mineral and metal compounds (*rdo sbyor rin chen sbyor*), an electuary made of medicinal powders (*sman phye lde lgu*), and compounds prepared with animal meats (*sha sbyor*), to which we shall return later on.

The second chapter preserves three theriac recipes classified as white (*dkar po dar ya kan*), yellow (*ser po dar yak an*) and dark compounds (*smug po dar ya kan*). The first is an electuary prepared with numerous plant substances and, as we shall see, shows similarities with the complex recipes preserved in the two sources of the thirteenth and fourteenth centuries. The enumerated substances are camphor, safflower, nodal silica of bamboo, nutmeg, cardamom, blue poppy, costus, cloves, birthwort, sandalwood, chiretta, Kharshu oak,[41] fever nut,[42] Java plum,[43] Chinese sumac,[44] the three myrobalan fruits, Bengal quince,[45] long pepper, black pepper, ginger, neem, diverse kinds of salt (*tshwa rnams*), cinnamon, Indian elecampane, zinc, rhino horn, Chinese mallow,[46] rhubarb, sea buckthorn, arching spirea,[47] diverse kinds of gentian, tamarisk, rhododendron, purging cassia,[48] rose, butterfly bush,[49] honeysuckle, hypericum poppy, feverpod, aconite, moonseed, fern, scape flower, lily, cleavers,[50] barberry, wild raspberry,[51]

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[38] *Sman dpyad zla rgyal* (Klu sgrub 1989, 248–57 [ff. 124v5–129r5]). Sections on theriacs: f. 125r1–2; f.127v3–4.

[39] *Sman dpyad zla rgyal* (Klu sgrub 1989, 312–16 [ff.156v5–158v2]).

[40] These are the feces of an infant, a puppy, and a calf. *Bus pa khyi'u dang khyi gu dang be'u dag gi* [*tshan bu*] *dar ya kan. Sman dpyad zla rgyal* (Klu sgrub 1989, f.125r1). See also next section on *smug po dar ya kan*.

[41] *Mon cha ra.* Otherwise known as *be shing* or *Quercus semecarpifolia.* Ghimire et al. 2021, 190.

[42] '*Jam 'bras*. *Caesalpinia bonduc*. Ghimire et al. 2021, 183.

[43] *Sra 'bras*. *Syzygium cumini*. Ghimire et al. 2021, 214.

[44] *Da trig*. *Rhus chinensis*. Ghimire et al. 2021, 127.

[45] *Bil ba*. *Aegle marmelos* or *Crateva marmelos*. Ghimire et al. 2021, 259.

[46] *Nyi dga'*. *Malva* spp. Ghimire et al. 2021, 212.

[47] *Smag shad*. *Spirea arcuata*. Ghimire et al. 2021, 258.

[48] *Dong ga. Cassia fistula*. Ghimire et al. 2021, 198.

[49] *Sgrong ba shing*. *Buddeleja crispa*. Ghimire et al. 2021, 226.

[50] *Zangs rtsi ba. Galium* spp. Ghimire et al. 2021, 258.

[51] *Kan da ka ri. Rubus ellipticus*. Ghimire et al. 2021, 257.

umbrella-like coelogyne,[52] Himalayan bistort, and sugars.[53] It is used to cure new and chronic fevers (*tshad rnying*), including infectious diseases that are classified under the category of "febrile disease" (*rims nad*), and a blood disease vitiated by bile (*khrag mkhris,* Skt. *raktapittaroga*).

The second recipe contains human and other kinds of yogurts (*zho tshan*), bear bile (*dom mkhris*), and a mixture of spices (*kha spod*), which is effective in treating chronic fevers. The last recipe contains foul substances as main ingredients; the feces of an infant, a foal (or a calf as in the previous indication), and a puppy (*phya tshan kun*)[54] are added to bezoar (*gi wang*) and sandalwood (*tshan ldan*) to create an antidote to several types of poisoning.

As seen, these ancient writings do not contain any direct quotation or clear reference to foreign literature and authors. At this stage of the research, no hypothesis can be formulated about the possible provenance of the recipes. However, in both the *Yellow Book of Biji* and the *Lunar King*, theriacs are distinguished by their composition, consisting of a few animal substances or identified as very complex plant-based compounds. Moreover, the recipes are classified according to various colors and their therapeutic applications. The question of color reminds one of the description of theriacs in Chinese sources wherein red and black theriac pills are associated with animal entrails or bezoars.[55] This leads to the assumption that diverse kinds of theriac recipes circulated in Tibet and China. In the Indian, Syriac, Persian, and Arabic medical literature, bezoars were highly esteemed medical substances. In the Tibetan sources under discussion, bezoar becomes a component of theriac. Likewise, animal and human fecal medicines, among other animal-derived substances, occurred in diverse medical traditions since the earliest times. [56] In the previous sources, they were integrated into theriacs, being attributed with protective and anti-poisoning potencies.

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[52] *Pu shel rtse. Coelogyne corymbosa*. Ghimire et al. 2021.

[53] The proposed identifications for most of these ingredients are provided in the final table.

[54] Byams pa 'phrin las 2006, 494.

[55] Chen 2019.

[56] For further inquiry on filthy medicinal formulas in Babylonian medicine, see Rumor 2020; on animal products in Greek medicine, see Dioscorides's *De Materia Medica* in a digital version of the Latin manuscript provided by the Bibliothèque nationale de France at gallica.bnf.fr. For a further inquiry into Syriac medicine, see the *Syriac Book of Medicine* (See Budge's transl. 1913) and Bhayro, Rudolf 2018; for animal derived recipes in Arabic medicine, see for example Raggetti 2019. For further inquiry into the usage of animal filth substances in Tibetan medicine, see Maurer 2017.

The section regarding white theriac is very interesting because it is linked to the cure of fevers and contagious ailments, which will be central in later Tibetan literature of the Yuan era. Many of the substances are found in Arabic theriac formulas (myrobalans, black and long pepper, cassia, gentians, fennel, resinous substances, costus, opium, rhubarb, honey, cinnamon, cardamom, sugars, etc.). Snake meat is enumerated in the Dunhuang manuscript IOL tib. J 756 but not in the *Yellow Book* or the *Lunar King*, at least not explicitly.

It was during the Mongol expansion in the thirteenth and fourteenth centuries that diverse theriac multi-compounds appeared in the Tibetan medical and alchemical literature. As we shall see, within these sources, the recipes were embedded in a Buddhist framework and were presented as ultimate remedies and protections against pestilence and poisons.

The interest in these alexipharmic remedies might be understood in the light of specific epidemics, which devastated both Western and Eastern civilizations. Historians of medicine have not reached a general consensus on the possible outbreak of plague in Yuan China.[57] However, most recently they have started reframing the plague by adopting the models of polytomy[58] and climate history.[59] Drawing on the phylogenetic reconstruction of the four branches and various strains of *Yersinia Pestis*, historians are now looking to the Tibetan Plateau, Xinjiang, and Kyrgyzstan as possible sources of the strains that caused the Justinianic plague (sixth century) and the Black Death (fourteenth century). [60] The possible spread of severe diseases—whether endemic or pandemic—could certainly represent the perfect scenario of thirteenth- and fourteenth-century medical discourses that dealt with the etiology of dreadful diseases, the proper regimen to be adopted, and effective cures. In these centuries, the search for a universal medicine emerged as a central theme in Western and Eastern healing traditions. The influence of the Black Death on Western medieval medical and alchemical sources has become a matter of debate among historians. Medieval and early modern European medical literature has been investigated in textual studies, which

57 Buell 2012, 127–44.

58 This model is used in this case to reconstruct the phylogenetic tree of pandemic diseases from the DNA sequence of one or more genes (Cui et al. 2013).

59 Green 2018, 1–30.

60 Scholars are focusing their attention on the second plague pandemic (fourteenth to nineteenth centuries) from the time when the Mongols started conquering new territories in the thirteenth century. See Allsen 2001, 151–54; Hymes 2014, 285–308; Fancy and Green 2021, 158. New studies are evaluating the role of the fur trade controlled by the western Golden Horde in the fourteenth century in the spread of the Black Death to Western Europe. See Namouchi et al. 2018, and the related project: http://www.aftertheplague.com.

attests to the extensive usage of opiates in the form of theriac as plague medicines.[61] The popularity of these remedies should be attributed to the authoritativeness of Latin translations of Greco-Arabic sources such as Avicenna's writings, which became widespread after the eleventh century.[62] Together with traditional medicines, alchemical remedies such as potable gold, *lapis philosophorum*, and *aquae vitae* were enumerated among the most efficacious protections against plague.[63]

Yuan or early Ming medical sources such as the *Collection of Muslim Prescriptions* (*Huihui yaofang* 回回药方) attest to the knowledge of foreign drugs, including theriac compounds, used to cure epidemics and skin diseases with raised sores and black skin blotches such as the "crab disease," erysipelas, bean-like buboes, different kinds of dysentery, and jaundice, but also wounds due to arrows and poisoning practiced by the Mongols in intertribal warfare.[64] Following the *Pax Mongolica* in the thirteenth century and subsequently, the cultural exchanges between China and Iran intensified and promoted the reception of Greco-Arab pharmacopeia and medical theories such as the Huihui 回回 medicines, which had a prominent role at the Yuan court, combining Galenic humoralism, Persian pharmacology, and elements of Āyurveda with Chinese pulse diagnosis and physiology.[65]

The historical and cultural background described above prompted the development of Tibetan polypharmacy and even explains the presence of theriacs in the pharmacological system in the thirteenth and fourteenth centuries. In the following, I examine the theriac recipes handed down in the following two sources.

The general contents and intertextual lineage of the *Vase of Amṛta* were introduced in previous publications.[66] To better understand the significance of this source in the history of Tibetan medical thought and literature, a few key remarks shall be provided here. This source well represents the historical and literary variegated traditions that originated in the cross-cultural Indian Buddhist and non-Buddhist tantric milieu and were further developed in Tibet from the later eleventh or twelfth century onward, bringing together diverse technologies (yogic, [67] metallurgical, alchemical, medico-pharmacological) devoted to the obtainment of immortality, life-prolonging results, and ultimate Buddhahood. The *Vase of Amṛta*

61 Nockles Fabbri 2007, 247–83.
62 Boudon-Millot and Micheau 2020, 329–413.
63 Crisciani 1998, 7–39.
64 Buell 2012, 133–34; Buell and Anderson 2021, 250–52, 487, 510–11, 664, 902–903. Pow 2013, 204–31.
65 Buell 2007, 279–95; 2011, 189–208; Schottenhammer 2013, 75–82.
66 Simioli 2016; 2019.
67 Schaeffer 2002, 515–33. Orofino forthcoming.

conjugates medical theories with alchemical and ritual practices. Its role in the codification of Tibetan mercury pharmacology has been probed due to the analysis of the *Ultimate Tantra* (*Phyi rgyud*) of the *Four Tantras* (*Rgyud bzhi*), in which sections from the *Vase of Amṛta* have been integrated.[68] Moreover, it reflects a particular development of the Nyingma Upadeśa literature (Man nag sde), fusing the cult of ambrosias and the related rituals of consecration and contemplation typical of Mahāyoga and the Eight Transmitted Precepts (Sgrub pa bka' brgyad ma) with the description of the dying process and divination of death signs that can be found for example in the *Union of the Sun and the Moon* (*Nyi zla kha 'byor*) of the Seventeen Tantras (Rgyud bcu bdun). Not only the intertextual relation with sections from this last tantra is unmistakable, but the *Vase of Amṛta* itself contains a direct reference to the Seminal Heart (Snying thig) literature.[69]

This contribution is conceived as a further analysis of such themes, which have been investigated to probe the role of this Nyingma source in the development of Tibetan pharmacology, nosology, and diagnostic methodologies, but with a different perspective aimed at situating the discourse in the Eurasian context of the history of theriac and the global history of pandemics. Moreover, this contribution is aimed at further deconstructing the literary and narrative layers of this cycle, reconnecting it to diverse traditions. The *Vase of Amṛta* pseudepigraphic corpus is ascribed to Padmasambhava, and as such, the criterion of legitimation and transmission of medical and alchemical knowledge has been established through this nexus to a religious figure and a well-defined scriptural tradition. Its narrative frame indeed features in an embryonic fashion a theme that became central in this apocalyptic literature, such as the Northern Treasures tradition (Byang gter, fourteenth century onward), including prophecies about the arrival of cruel soldiers, who are enemies of the Buddhist doctrine, as signs of the "dark age of corruption" (*snyigs ma'i dus; kaṣāyakāla*).[70] However, as suggested by William McGrath, these

[68] Simioli 2016.

[69] *'Chi med bdud rtsi bum pa* (2) [62/1–70/9]. The reference to the *snying thig* literature can be found in *'Chi med bdud rtsi bum pa* (2) [70/8–9]: […] *snying thig gces shog dril* […]. For further inquiry, see Simioli 2019.

[70] See Childs 1999, 126–58; Orofino 1991, 239–71; Gelle 2020, 77–83. *'Chi med bdud rtsi bum pa* (1) [2v3]: *tu ru ka yi dmag kyang 'byung/ bstan pa'i tshogs dus bcom par byed//*; *'Chi med bdud rtsi bum pa* (2) [2/12]: [. . .] *tu ru ka yi dmags [dmag] kyang 'byung/bstan pa'i tshogs dus bcom gyin med//*. The word *tu ru ka* derives from the Sanskrit Turuṣka. The first book of the *Rājataraṅgiṇī* text (twelfth century) uses this word as a synonym for Muslims, who were described as cruel and iconoclastic soldiers. See Slaje 2019, 141 and passim. Twelfth-century Tibetan sources, such as the travelogue authored by Chag lo tsā ba Chos rje dpal (1119–1264), use the term to identify Turkic people of Islamic faith, who harmed Buddhist sacred places and monastic institutions in India. From the thirteenth century onward, the exacerbated anti-

elements may be interpreted from a historical perspective, and the cycle could presumably refer to a period after the Mongol military campaigns in Central Tibet and Khams, which took place between 1240 and 1260.[71]

As research on this work progresses, significant new elements emerge, allowing us to evaluate the variety of materials that have been preserved and reframed in this source. As we shall observe in the upcoming section on the analysis of terminology and the origin myth of mercury theriac, the *Vase of Amṛta* reveals an interrelation with Bön literature on *nyen*, ambrosias, and cosmogonic myths associated with apotropaic rituals of purification, which might explain the transmission of this source in the Dongrü Minyak (Ldong rus mi nyag) lineage.[72]

The *Measure of Gold* is a very complex and stratified corpus of pith instructions, which appears to be the result of a meticulous work of redaction to preserve medical, alchemical, and ritual practices of diverse origins, selected from a variety of earlier medical and tantric sources, to build a systematic and exhaustive anthology. Large portions of it are devoted to literature on poisons, alexipharmic remedies, and apotropaic rituals associated with the cult of divinities

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Islamic narrative, certainly influenced by the *Kālacakra*, also appears in the *gter ma* literature, where *tu ru ka* were blamed for the decline of Buddhism in India. See Truschke 2018, 422–25. In many *sbas yul* texts, *tu ru ka* is also associated with *gar log*, the inhabitants of the homonymous area from the region northwest of Mnga' ris, identified with the confederation of Qarluq Turks, who played an important role in the formation of the Qarakhanid Qaghanate. According to Tibetan royal genealogies of Western Tibet, the *gar log* overwhelmed the Gu ge Kingdom in the twelfth century. The Qarlug became part of the Chagatai Ulus. On the Qarluq Turks, see Golden 1992 and 2006. For references on *gar log* Qarakhanids in the Mnga' ris royal genealogies, see Vitali 1996, 347–53. *'Chi med bdud rtsi bum pa* (2) [. . .] 4/20–5/1: *mtha' mis hor gyis dbus yul bzung nas la/ bod khams sems can bzhi gsum gyi dbugs dang bral nas chems* [*cham*] *la bebs pa'i tshe//*. "Hor" was originally used to identify Uighurs. During the Yuan, it was used to refer to the Mongols, who conquered the West Uygur kingdom of Tian shan in the thirteenth century. It now denotes the nomads of the north of Tibet and the Hor people of the Kokonor area. Scholars have hypothesised that the Hor people of Northern Khams descended from intermarriages between the local population and Mongolian troops of supposedly Tangut Xi Xia origin in the mid-thirteenth century (Garri 2020).

71 Vitali 2019, 449–68. On the Mongol invasion of Tibet and a preliminary analysis of the question of Black Death as depicted in the *Vase of Amṛta,* see McGrath 2021a, 214–29. For further inquiry into the early descriptions of epidemics in Tibetan sources, see also McGrath 2021b, 637–70.

72 *Mi nyag rigs la thog thub mdongs* [*ldong*] *kyi rus. 'Chi med bdud rtsi bum pa* (2) [111/11–20]. There are other themes that point to this connection, such as the presence of divination, which can be found in both the *Rnying ma nyi zla kha sbyor* and *Zhang zhung snyan rgyud* literature, as well as the *mda' mdar* and *ljags 'jibs* rituals. Simioli 2019, 241, 253.

such as Vajrabhairava,[73] Narasiṃha[74], and Jāṅgulī.[75] The *Great Measure of Gold* had an important role in the reception of alchemical *rasaśāstras* and the construction of the Tibetan tradition of the great purification of mercury (*dgnul chu btso bkru chen mo*), attributed to Orgyenpa Rinchen Pel (O rgyan pa rin chen dpal, 1209–1229/30).

This literary scenario provides the framework within which to analyze the vocabulary and mythologems associated with the origin of the key substances of the following theriac recipes. The primary recipes and their therapeutic uses will be discussed to evaluate the continuity and the differences with respect to other theriac traditions.

2. The Five Theriacs of the Vase of Amṛta: The Corresponding Theriacs and Ambrosias with Coded Names and Procedures

The portion of the *Vase of Amṛta* under consideration is titled the *Champion of the Five Extraordinary Children Surpassing the Mother* (*ma bas lhag pa'i bu lnga'i gyad*).[76] The word *gyad*[77] refers to filial texts (*bu yig*) that complement the root tantras of the textual cycle. It appears, indeed, in the titles of sections on divinatory prognosis, preparation of textual amulets, magic unguents and pills, and diverse meditative stages (here *samādhi* and *devatābhāvanā*) that were included in the vajra armor ritual.[78] Moreover, it denotes those chapters related to the initiation of the disciple.[79] The centrality of these sections is denoted by the metaphoric descriptions according to which the champion who sustains the vase of ambrosia (*bum pa 'degs pa'i gyad*) is like the main pillar *(bum pa 'degs pa'i ka chen*) or the carved lion of a throne (*bum pa 'degs pa'i seng ge khri*).

The examined section preserves five theriacs. As in many other cultures where theriacs were used and developed, they did not represent a stable tradition and were also characterized by a certain degree of secrecy, as is evident from the coded names of substances

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[73] *Gser bre chen mo* [112–13].

[74] *Gser bre chen mo* [113/1].

[75] *Gser bre chen mo* [102/6].

[76] The *gyad* sections are otherwise titled *mkha' 'gro gsang ba'i snying khrag gi gyad*. The *Heart-blood of the Ḍākinīs* (*Mkha' 'gro gsang ba'i snying khrag*) is another title used to address a core part of the *gter ma. 'Chi med bdud rtsi bum pa* (2) [79/8–10]; [82/5–6].

[77] This archaic word has an equivalent in old Chinese; see Coblin (1986) 2018, 93. Moreover, among the Bon *dbal* deities, there is the retinue of the fierce theriomorphic *gyad* and *gyad mo*. On these protectors, see Kvaerne 1995; Blezer 2000.

[78] *'Chi med bdud rtsi bum pa* (2) [62/1–72/13; 78/1–15]. The ritual of the *Armor that Protects the Vital Force* (*lus srog srung ba'i go cha*) includes (1) *chig rgya thub pa'i'khor lo gyad*; (2) *phyug sman gyi gyad*; (3) *sgom pa ting'dzin gyi gyad*; and (4) *yi dam lha bsgom gyi gyad*; see also (5) *rang nyid srung ba'i phur ba gyad* (Simioli 2019).

[79] *'Chi med bdud rtsi bum pa* (2) [75/1–77/15]: *snod rung bsdus pa dbang gyi gyad*.

and technical terms. Theriacs are essentially poly-pharmaceutical remedies, wherein the substance that gives the name to the compound represents the basic constituent of one theriac. Five key substances are identified in this cycle, and each of them forms the pivotal ingredient of one of the five theriacs as follows: (1.) golden myrobalan (*harītaki* or *a ru ra gser mdog*),[80] which is the "bone theriac" (*rus pa dar ya kan*); (2.) locoweed (*stag sha*)[81] or the "meat theriac" (*sha dar ya kan*); (3.) mercury (*dngul chu*), which is the "brilliant moon theriac" or "nucleus seed theriac" (*zla zil dar ya kan*; *thig le dar ya kan*); (4.) limestone[82] (*cong zhi*) or the "fat theriac" (*tshil bu dar ya kan*); and (5.) saxifrage (*g.ya kyi mo*)[83] or the "blood theriac" (*khrag dar ya kan*).[84]

These substances are identified with the consecrated "five ambrosias" (*bdud rtsi lnga*). This equivalence could represent the criterion by which the use of these recipes may have been legitimized as a form of alchemical and ritual knowledge in the tantric context.

The analysis of the theriacs shall be conducted in the light of distinctive practices and formulas to avert death, which are dealt with in the *Vase of Amṛta* and reflect topics that can be found in both Buddhist and Hindu tantras, *rasaśāstras*, and āyurvedic classics. [85]

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[80] *A ru ra*. *Terminalia chebula*. See Dga' ba'i rdo rje 1995, 167–68. On the role of this fruit as a universal panacea, see Yoeli-Tlalim 2021, 63–84.

[81] *Stag sha*. This plant belongs to the genus *Oxytropis*. According to Dga' ba'i rdo rje (1995, 211–12), there are two plants subsumed under this name: (1) *Oxytropis reniformis* and (2) *O. microphylla*. They are effective against communicable fevers (*gnyan tshad*) and poison-induced fevers (*dug tshad*); they cure suppurations, swelling diseases, sores, and hemorrhages. See Byams pa' phrin las 2006, 321–22; Czaja 2017, 197–98; Ghimire et al. 2021, 186.

[82] The identification of *cong zhi* varied. In Tibetan regions of China, many forms of gypsum are identified as *cong zhi*. In the Himalayan regions, calcite and other forms of sedimentary limestone are used. I am indebted to Barbara Gerke who pointed me to the different identifications. For a case study on *cong zhi* processing in the Himalayas, see Gerke, van der Valk, Tidwell, and Blaikie, forthcoming. According to the narratives of both *'Chi med bud rtsi bum pa* (1) and *'Chi med bdud rtsi bum pa* (2), the *gter ma* was retrieved at the temple of Byang pra dun rtse, which is currently located in the 'Brong ba county of T.A.R., north from the Nepalese border. Therefore, it can be hypothesized that the text may refer to certain forms of limestone as *cong zhi*.

[83] *G.ya' kyi mo* [*ma*]. According to Dga' ba'i rdo rje (1995, 283), this plant corresponds to *Chrysosplenium carnosum*. Its cooling potencies can be beneficial in cases of bilious fevers (*mkhris tshad sel*). See also Ghimire et al. 2021, 264.

[84] On mercury, see *'Chi med bdud rtsi bum pa* (1) [88r/2–93r/5] and *'Chi med bdud rtsi bum pa* (2) [87–92]; on limestone, see *'Chi med bdud rtsi bum pa* (1) [118r5–123r6] and *'Chi med bdud rtsi bum pa* (2) [101/2–112/9]; on locoweed, see *'Chi med bdud rtsi bum pa* (1) [86r/46–88r/2] and *'Chi med bdud rtsi bum pa* (2) [82/8–86]; on myrobalan, see *'Chi med bdud rtsi bum* pa' (1) [81v/6–84r6] and '*Chi med bdud rtsi bum pa* (2) [79–82/7]; and on saxifrage, see *'Chi med bdud rtsi bum pa* (1) [50v1–56r6] and *'Chi med bdud rtsi bum pa* (2) [93–101/1].

[85] See for example Yamano's studies on the *Kakṣapuṭatantra* (Yamano 2014).

These are the practices of "cheating death" (*mṛtyuvañcana, 'chi bslu*) or "conquering death" (*mṛtyuñjaya, 'chi 'joms*) and "reviving the dead" (*mṛtasaṃjīvana, shi sos*), which in the *Vase of Amṛta* refer to the uses of a group of substances and recipes addressed respectively as "hero" (*dpa' bo*) and "elixir that revives the dead" (*bdud rtsi shi so*).

The term *dpa' bo* mirrors an encoded alchemical symbolism: being the Tibetan translation of *vīra*, the tantric hero, the siddha, or the male divinity. The "hero" can also be intended as a synonym of the "victorious" (*rgyal ba*; Skt. *jina*) epithet of Buddha himself who conquered the *māra*s (*bdud*).

As I have argued elsewhere,[86] this word identifies different sets[87] of substances that are usually arranged as the "nine heroes" (*dpa' bo rnam dgu*). The number, however, varies. These substances are purported to be endowed with intrinsic therapeutic potencies and occult virtues (*nus mthu*) that imply the power to avert disease-carrying demons and eventually even to defeat death itself (*'chi bdag 'joms pa'i dpa' bo*).[88] Similar formulations can be found in other medico-alchemical sources.[89]

The nine heroes formula gains its power through rituals; they should be consecrated (*rab gnas sman grub*) to become recipients of specific manifestations of the Buddha.[90] Such identification not only reveals the alchemical and religious substratum of the examined

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[86] Simioli 2019.

[87] The lists of substances provided in the *'Chi med bdud rtsi bum pa* vary. According to *'Chi med bdud rtsi bum pa* (2) [24/16–18], the nine substances are *gla ba, gu gul, gi wang, shin kun, shu dag, sman chen, a ru ra, ldong ros,* and *sgog skya*; according to *'Chi med bdud rtsi bum pa* (2) [65/8–10], there are ten substances: *gul nag, bong nga nag po, spru nag, gla ba, shing kun, shu dag, mu zi, stag sha, ldong ros,* and *sa tshur*. According to *'Chi med bdud rtsi bum pa* (2) 70/12–1], (1) the substances used for preparing the protective unguent are *gla ba, gu gul, shing kun, shu dag, rma chen, ldong ros, gi wang, thar nu,* and *sgog skya*; and (2) the substances used for the medicinal powders are *sha chen, spru nag, stag sha, gla ba, mu zi, bong nga, yung ba,* and *ru rta*.

[88] *'Chi med bdud rtsi bum pa* (1) [96v6–97v1]. Simioli 2016.

[89] These nine heroes can be compared with another recipe known as the "nine-ingredient black pill" (*nag po dgu sbyor*), which Tibetan authors ascribed to deutero Nāgārjuna or Nāgārjunagarbha (*klu sgrub snying po*), thus connecting this formula to Indian tantric and alchemical lore. See for example *Nag po dgu sbyor ba nad gdon kun 'joms* in the *Bye bya ring srel*. See Zur mkhar ba myams nyid rdo rje 1993: 727/6–728/16. See also *Rin gter sman yig gces btus* [390/1–392/11]. The ingredients are *a ru ra* (chebulic myrobalan), *btsan dug* (aconite), *gla rtsi* (musk), *shing kun* (asafoetida), *gu gul* (guggul gum resin), *mu zi* (sulphur), *shu dag* (sweet flag), *gi wang* (bezoar), and *rgya snag tshwa* (Chinese black ink).

[90] *'Chi med bdud rtsi bum pa* (1) [40r5–6; 41v2–3]: [. . .] *sman so so rang rang gi/ / lha bskyed de de'i steng du ye shes sems pa spyan drengs la// mchos stod bskur bsol bar gdab bar bya / /*; [. . .] *sman lha a ru ra gu ru yab yum sman chen gla ba// thugs rje chen po shu dag// manju shri gi wang//gsang bdag gu gul// rta mgrin shin kun//bdud rtsi khyil ba mu zi// sgrol ma chig skyes/ /*.

terminology, but also points to a certain continuity of narrative motives and ritual practices handed down in the medical literature. The hero substances seem to reflect a concept akin to the idea behind the etymology of the Greek word *alexipharmakon* ἀλεξιφάρμακον as the classic designation of the antidote that "heroically averts evil."[91]

The second term refers to recipes that have their antecedent in the anti-poison formula (*agada*) of the *Carakasaṃhitā* (*Cikitsāsthāna* 23.46–50).[92] In the *Vase of Amṛta*, it appears in a section titled *Method to Cure the Black Collapse, the Elixir Reviving the Dead* (*cog 'gyel nag po'i bcos thabs bdud rtsi shi sos*), which introduces an epidemic disease that is difficult to cure.

Interestingly, the semantic and functional interchangeability that favored the reception of diverse formulas in the tantric context appears also in ancient Greek sources; theriaca, ambrosia ἀμβροσία, and athanasia ἀθανασία in the Galenic literature were all used to indicate remedies against mortal poisons.[93]

Before moving to the various theriac formulas, I shall explain the nosological category of the "black collapse," which plays a central role in the cycle and provides us with important information about the epidemiological context mentioned before. It also occurs in the *Great Measure of Gold* (see Section 3), thus corroborating the statement that theriacs were conceived as anti-epidemics par excellence in the thirteenth- and fourteenth-century medical literature.

According to the *Vase of Amṛta*, the "black poisonous collapse" (*ha la cog 'gyel nag po*),[94] which is caused by noxious wind, fever, and *nyen* (*nag po gsum sgril*) combined, is also subsumed under the rubric of "the virulent disease of sardonic grin and bending or arching nape" (*gnyan nad 'dzum bu ltag dgye*).[95] The neural aspect of the disease is indicated

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91 Skoda 2001, 276.

92 Sharma 1998, 370–71.

93 Skoda 2001, 286–90.

94 *Cog 'gyel*. This is categorized as a *gnyan* disease that affects the brain and the heart and brings sudden death to everyone (*dug can srin bus bskyes pa'i gnyan nad stobs chen snying dang klad pa la phog nad yod do kun 'gyel te srog 'dor byas pa'i don*; Byams pa 'phrin las 2006, 998; see also Simioli 2019). This concept is akin to that of *janapadoddhvaṃsa***.** This last term, which appears in the *Carakasaṃhitā* to identify epidemic diseases, implies destruction over an entire region or as Dominik Wujastyk (Wujastyk 2011, 69) renders it, "a blight on the community." The first part of the term *janapada* refers to country people or in general to a plurality. *Uddhvaṃsa* means to destroy or destruction. It is related to *dhvaṃsa*, which means "destruction" but also "to fall." They seem to reflect the meanings of the Tibetan words *sgyel ba* and *'gyel ba*.

95 *Ltag* is the area of the cervical spine that houses the spinal cord that is connected to the brain (*ltag chu rtsa*), which in modern anatomy corresponds to the medulla oblongata (*rgyung ba*). *'Dzum bu ltag dgye* results in the appearance of a sardonic grin and to spasms of the arching nape. *Ltag dgye* appears in IOL TiB J 756 41–42;

by the presence of noxious wind. This fever, as the name seems to suggest, might be characterized by a sort of opisthotonic posture. Moreover, it is characterized by black shortened lips (*mchu ni gnag thung*) and some sort of smile or open mouth (*rta rgan 'dzum mdangs bab ngong mo ston pa 'dra*)[96] that resembles that of an old horse and which, I think, could point to some sort of cyanotic lips and trismus. The prodromal signs (*skya rims kyi rtags*) of the "black poisonous collapse" include pain at the shoulder, the back of the neck corresponding to the trapezius area (*gnya' mjing*), and at the scapula (*srog ma*).[97] It is characterized by some sort of conjunctiva,[98] a swollen neck at the area of cervical vertebra (*an stong skrang*), white bumps on the tongue (*lce thog 'brum dkar*), and a black spot under the tongue (*'og tu nag tig ong*),[99] together with an obstructed throat and ulcerous skin sores (*gag lhog cog rgyal*).

It is also characterized by intense pain due to an inflammation perceived as a boiling sensation or swollen pustules (*khol* [*khol bur na ba; khol bur sha 'phrig*])[100] at the groin or socket in the cavity of the hipbones (*dpyi; dpyi mig*), around the waist or lumbar vertebra (*sked*; *sked tshigs*), and at the "gathering door points" of the nape, which are located at the occipital fontanel (*ltag sdud sgo*), causing unbearable pain at the meninges and in an area that could correspond to what in biomedicine is the area of the medulla oblongata.[101] However, the term "gathering doors" can also refer to four different points included between the bregma (*mtshogs ma*), the crown of the head (*spyi gtsug*), and the posterior fontanel. It might also be identified as the points behind the ears at the mastoid (*rna ltag*) and at the sideburns at the temporal area (*rna ba'i skra mtshams*).[102] Another specific sign is a pulsating ring finger artery (*srin lag rtsa ba 'phar ba*), which means that the disease has penetrated the vital channel (*srog rtsa*). Necrotic tissues

181. For a modern explanation, see Byams pa 'phrin las 2006, 281–82. Nowadays, this disease is often aligned to viral meningitis or encephalitis, which can cause convulsions and loss of consciousness. See, for example, Tidwell and Gyamtso 2021, 108.

96 *'Chi med bdud rtsi bum pa* (2) [16/1–3].

97 *'Chi med bdud rtsi bum pa* (1) [92v1]; *'Chi med bdud rtsi bum pa* (2) [63/3–4].

98 *'Chi med bdud rtsi bum pa* (2) [36/2]: [. . .] *mig gi rtsa ris la khrag gi thig le ong//*

99 *'Chi med bdud rtsi bum pa* (2) [36/4].

100 *'Chi med bdud rtsi bum pa* (1) [58v1]; *'Chi med bdud rtsi bum pa* (2) [156/4–5].

101 *'Chi med bdud rtsi bum pa* (1) [8r1; 9v5] and *'Chi med bdud rtsi bum pa* (2) [10/17–18;'13/18]. These same signs in our sources describe both the condition known as "brain infection–derived pain" and the "bending nape" condition. *'Chi med bdud rtsi bum pa* (2) [177/4–7]: [. . .] *mur gor ltag pa gzer ba dang/ 'phar rtsa 'khyug la 'phar ro//*. See a similar description in Sangs rgyas rgya mtsho's *Lhan thabs dang lde mig* [118/22; 121/13 et passim].

102 On *Sdud sgo*, see Byams pa 'phrin las 2006, 408.

or petechiae appear on the body, and the ears and nose become black (*rna'i rtse mo nas sna ba'i rtse mo nag por 'gro*).[103]

The analysis conducted so far has served to achieve two purposes: (1.) framing the Nyingma treasure text in a precise literary context that connects it to the Mahāyoga and earlier Seminal Heart traditions[104] and further back to Indian tantric and alchemical traditions dealing with death and long-life elixirs; (2.) illustrating that this thirteenth century source is focused on the description and cure of a widespread disease that could meet the biomedical description of bubonic plague, especially considering tissue necrosis and lymph node buboes.

The following section on substances, formulas, and ancillary descriptions of diseases probes the complexity and the variety of religious and pharmacological elements merging in the treasure text. In this regard, possible interrelations with Buddhist canonical sources and Bön materials will be pointed out. A detailed list of formulas and their therapeutic applications is provided to corroborate what has been anticipated by the previous nosological digression and on the status of theriacs as panaceas in the Tibetan medico-alchemical context.

2.1 Recipes and Applications of the Five Theriacs

In this section, the key substances (and their secondary names and epithets), origin myths, potencies, and ritual uses are presented. The primary therapeutic purposes of theriacs are discussed to achieve a nuanced idea of how widespread and contagious diseases, as well as other severe conditions, were classified in this thirteenth-century treasure text.

The formulas are summarized in five tables and accompanied by a list of secondary ingredients (in Wylie transliteration) with proposed Latin taxonomical identification and English common names (Tables 1–6).[105] The tables provide an overall schematic picture, allowing readers to notice how *materia medica* and applications reflect similarities to those attested not only in the Indian but also Greek, Persian, Syriac, and Arab pharmacological traditions.[106] However, in contrast to the unedited earlier sources examined above, the literary

[103] *'Chi med bdud rtsi bum pa* (2) [11/4–5].

[104] Simioli 2019.

[105] As for the earlier sources on theriacs, the following proposed identifications are mainly based on the descriptions that can be found in the analyzed primary sources as well as on the information provided in Tibetan medical dictionaries and pharmacopeias (Byams pa 'phrin las et al 2006; Dga' ba'i rdo rje 1995; Karma chos dpal 1993) and ethnobotanical and historical studies (Boesi 2006, 2007; Czaja 2017; 2019a, 2019b; Ghimire et al. 2021).

[106] For a comparison, see Boudon-Millot and Micheau 2020.

clusters and knots are more difficult to identify in this stratified medico-alchemical literature, in which elements from diverse systems and practices are incorporated.

Snake meat appears in a few formulas, but without a description of its preparation (which part of the animal should be used or whether a troche is prepared). Those formulas that contain snake meat along with lizard and salamander meats are particularly interesting because they belong to an enduring legacy of aphrodisiacs preserved in the Tibetan tradition. These are hinted at in the *Lunar King* and represent a tradition that might be another possible example of cross-cultural medical knowledge.[107]

Other well-recognizable recipes also converge in these theriacs, such as those regarding the cure of sight impairments (see the limestone theriac section) containing *awa* (*a ba*) as an ingredient.[108] These have a long history that can be also connected to the medical texts preserved in the Buddhist Canon, such as the *Medical Ritual* [*to Compose*] *the Medicine Awa Explained by Ācārya Nāgārjuna*.[109]

Each of the next subsections introduces one of the five theriacs according to the established criteria.

2.1.1. Golden Myrobalan Theriac

Since myrobalan possesses the six tastes, the eight potencies,[110] and the three post-digestive qualities, the golden myrobalan theriac can overcome all nine categories of contagious fevers (*rlung mkhris bad kan la sogs pa'i rims nad thams cad 'jil ba'i sman*). In the *Vase of Amṛta,* we find a categorization of diseases that was also proposed by the canonical

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[107] Simioli 2024.

[108] According to Tibetan pharmacopeias, the word *a ba* or *a wa* can refer to both a plant and a mineral because these substances share identical potencies and, therefore, they might be reciprocal substitutes to be used in medical formulas. The plant or *rtsa a ba* can be identified with the mountain spiderwort of the lily family [*Gagea serotina*; *Lloydia longiscapa*], which is said to be a nectar medicine that can cure all eye diseases and sight impartments. The mineral medicine is generally identified as a "dark panacea" (*smug po cig thub*) or "dark spearhead" (*mdung rtse smug po*; goethite). It is particularly beneficial for eye diseases and can cure skull and bone fractures (Dga' ba'i rdo rje 1995, 73–74; Byams pa 'phrin las 2006, 1016).

[109] Tōh 4309, bstan 'gyur (Sde dge), vol.198 (mdo'grel, he), ff.12r/4–13r/7: *slob dpon klu sgrub kyis bshad pa sman a ba'i cho ga*.

[110] *'Chi med bdud rtsi bum pa* (2) [80/1–2]: *Nus pa brgyad*. It is heavy and oily and therefore can cure wind disorders (*lci ba dang snum pa gnyis kyis rlung nad sel ba*); it is cooling and gentle and therefore can cure bile disorders (*bsil ba brtul ba gnyis kyis mkhris nad sel ba*); and being light, rough, warming, and sharp, it can cure bile diseases (*yang ba dang rtsub pa tsha bar no ba bcas bzhi bad kan nad sel ba*).

medical literature ascribed to G.yu thog gsar ma yon tan mgon po.[111] Misbehaviors (*log spyod*) and miasmas (*gdugs pa can kha rlangs*) spread by non-human beings are presented as the general causes of all epidemic fevers.

This section regarding the myrobalan theriac enumerates a series of conditions that can be treated with this theriac, such as "the red madder-like disease" (*le brgan*),[112] which generally corresponds to the cited *raktapitta* described in āyurvedic sources and here is associated with discolored skin with crimson spots (*sha bkra dmar ser*); "cerebral pain" (*klad gzer*);[113] the "clouding of consciousness" (*rmongs bu*),[114] pneumonic fevers (*glo rims*), and fevers affecting the blood (*khrag rims*); and the "*tretreho* disease" (*tre tre ho*).[115]

Aside from curing those conditions, this theriac promotes bodily heat and digestion, cures ophthalmic diseases and putrefactions (*rul gcod*), and dispels uncanny evil forces.[116] Given all its potencies and virtues, it is called "the supreme medicine, universal panacea" (*sman mchog rgyal po chig thub*). In sum, this theriac is purported to be effective in cases of febrile diseases that affects the brain, gallbladder, and liver since the quoted *tretreho* (*tre tre ho*) disease is usually associated with the *nyen* fever, biliary disease (*gnyan rims mkhris pa rtsa rgyugs*), which will be described in detail in connection to the saxifrage theriac.

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[111] *Rims nad gso ba*, in G.yu thog yon tan mgon po, *Bu don ma* (Mi rigs dpe skrun khang ed. 2005) [84/3 et passim.].

[112] Classified as *mkhris rims*, this is a febrile congested-liver disease that causes the accumulation of red mucus (*lud dmar*) and nose bleeding, and is, therefore, called red madder-like disease (Byams pa 'phrin las 2006, 889).

[113] According to the *Vase of Amṛta*, this communicable disease presents the same signs as the other infectious diseases determined by *rlung* or *bad kan* in their prodromal phase when the skin, tongue, urine, and feces become pale in color (*skya nad*, lit. the "pale disease"). On *skya nad*, see Byams pa 'phrin las 2006, 34; on the signs of *bad kan gyi rims*, see the *Zla ba mgon nga, Yan lag brgyad pa'i snying po'i rnam par 'grel pa tshig gi don gyi zla zer* [834/17–18]. The specific signs are headache, especially at the temples (*mur gong*), and at the cervical area, where the arteries pulsate very quickly; red eyes (*mig srin* [*sprin*] *dmar*); painful torso (*stod du gzer*); and cough (*glo yong*). See *'Chi med bdud rtsi bum pa* (2) [177/6–9].

[114] In the *Bu don ma* and the *Man ngag rgyud*, this is described respectively as *rims nad* and *gnyan rims*. In both cases, it is classified as *bad kan rims* and characterized by mental torpor, amnesia, and aphasia. *Bu don ma* [86/1–4]; G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brgyad pa gsang ba man ngag gi rgyud* (Bod ljongs mi dmangs dpe skrun khang ed. 1982, hereafter *Rgyud bzhi*) [245/8–11].

[115] *Rims smyon tre tre ho*. Byams pa 'phrin las 2006, 300; Tidwell and Gyamtso 2021, 108. See also *Bu don ma* [100/1 et. passim] and *Rgyud bzhi* [244/1–3], in which it is categorized as *'dus rims*.

[116] *'Chi med bdud rtsi bum pa* (2) [79/16–80/1].

2.1.2. Locoweed Theriac

The locoweed theriac is also considered a panacea (*nag po chig thub*). It is called by the epithets of "black one, dreadful demon of ulcers" (*nag po lhog pa'i bdud*), the "one with dark leaves and thick flowers" (*lo ma smug po me thog 'thug*), and the "meat embodiment of semen and blood" (*srid pa'i khu khrag 'dus pa'i sha*). The text provides information about where to find it and the appropriate times and procedure to collect it. Being considered a goddess, locoweed should be collected on auspicious days such as during the third full moon of the first month of autumn (*ston zla ra ba'i nya gsum*) after one has generated bodhicitta, visualized the *yidam* divinity, and recited mantras and chants of auspiciousness. Locoweed is said to pacify the evil influences of *sadak* (*sa bdag*), *lu* (*klu*), *nyen* (*gnyan*), uncanny life force-hunting children, blood and serum, and hardened swellings (*mi zad pa'i skrangs*). Of particular interest are formulas that contain locoweed, which are associated with apotropaic and alchemical purposes that contain many of the nine hero substances and substances purported to possess magical virtues, such as the flesh of a man killed by stabbing (*gri shi*) and human blood. Once eaten, worn as an amulet, fumigated,[117] or smeared on the house door,[118] these remedies bestow complete invulnerability from contagious diseases (*'gos rims thams cad thub pa yin*). They can even confer complete protection from poisons, purify gold, and bestow wisdom and the nocturnal sight of an owl. Relevant medical applications include the cure of abdominal cramps (*glang thabs*), obstructed throat (*gag pa*),[119] ulcerated sores (*lhog pa*),[120] and other *nyen* and febrile diseases such as hepato-pulmonary conditions (*glo mchin khrag mkhris rims*), epidemic dysentery (*rgyu zer*); conditions characterized by poxes (*'brum bu*); the pneuma that block up the pharynx and the respiratory tract, causing tinnitus and vertigo;[121] abnormal masses in the chest (*bad kan byang khog skran*); skin diseases that could be classified either as scabies or mange (*rkong*);[122] burn-like

[117] *'Chi med bdud rtsi bum pa* (2) [83/3–7].

[118] *'Chi med bdud rtsi bum pa* (2) [83/7]: [. . .] /*sgo la btags bhyug gdon yang thub*//.

[119] This aligns with the biomedical description of diphtheria.

[120] Our text describes six diverse categories of sores: (1) *rlung lhog pa* with pale and pulsating swellings; (2) *me lhog pa* with bloody and painful swellings; (3) *chu lhog pa* characterized by cool vesicles; (4) *sa lhog pa* with solid and black swellings—the two serious forms known as wild one or *rgod lhog* and the *wildest* or *yang rgod lhog* are characterized by large swellings. See *'Chi med bdud rtsi bum pa* (2) [129/7–19].

[121] *'Chi med bdud rtsi bum pa (2)* [84/16–17]: […] *rlung nad gyis mgo 'khor rna 'ur mtshul gags sel*[…].

[122] *Rngo nad,* an infectious skin disease formed by itching wounds, lesions, and pustules. It can infect ovine and caprine animals, which can pass it to humans. See Byams pa 'phrin las 2006, 25; 193.

ulcers (*me dbal*), old wounds, and scrofula (*rmen bu*); and infection of the teeth and gums (*kha rnyil lce so'i tsha ba*). It also has abortifacient (*bu dang bur thon*) and antidiarrheal properties (*'khru ba 'chad pa)*. The entire series of recipes to prepare locoweed theriacs is outlined in Table 2.

2.1.3. Mercurial Theriac

The mercurial theriac is a medicine prepared through iatrochemical procedures and rituals, which, in the alchemical context of the *Vase of Amṛta*, is considered the unsurpassable remedy, the prime medicine among the five theriacs. The procedures and diverse recipes also appear in the *Ultimate Tantra* of the *Four Tantras*,[123] again indicating the profound nexus among Nyingma alchemical literature and the mercury pharmacology codified in the canonical medical sources. The pharmacological and ritualized aspects of these iatrochemical procedures that transform mercury into a supreme protection against demonic pestilences, poisoning, and black magic have been discussed elsewhere.[124] Its nature as an elixir and universal panacea is expressed through innumerable epithets and metaphors, which hint to its theurgic essence of mythical origination.[125] The mercurial medicine is even equated to the seminal fluid and nucleus seed of an unspoiled Buddha nature (*thig le dar ya kan*). This last point can be clarified in the light of the comparison to the Buddhakāyas.[126]

This theriac is the "resin, the prime medicine" (*sman gtso spyi ba*), because it can cure all humoral disorders and is a pacifier of pains due to fatal diseases. It is the "watery white medicine" (*chu'i sman dkar*) because it can cure all kinds of poisoning; when the theriac defeats the disease of blood, bile, and fevers because of its cooling potencies, it is compared to the "rushing river that flows from the glacier" (*bsil chen gangs kyi chu rgod*). According to this tantric imagery that draws from the main apotropaic rituals preserved in the treasure text, when mercury eliminates the obstructions created by the eight classes of gods and demons, it is the "soaring white garuḍa" (*gnam gyi bya khyung dkar po*), and it becomes the "blue iron wild boar of cemeteries" (*lcags kyi dur phag sngon po*) that cures ulcerating sores and obstructed

[123] *Rgyud bzhi* [601/9–604/14].
[124] Gerke 2019; 2021; Simioli 2016, 401–3.
[125] On other origin myths and processing steps of *btso bkru chen mo,* see Gerke 2021, 222–34.
[126] *'Chi med bdud rtsi bum pa* (1) [89r4] and *'Chi med bdud rtsi bum pa* (2) [88/13–14]: […] *rtog pa med dang 'dod bzhin/ gang gang la 'dod der stonpa'i/sprul pa'i sku zhes bya ba yin||. 'Dod bzhin"* stands for *ji ltar 'dod pa bzhin long spyod kun tu ston pa.*

throats.[127] By translating very concise sections of the *Vase of Amṛta*, I would like to show how, in accordance with what has been said about the origin myth, there are *topoi* that point to Bön origin narratives of rites of purification and to an underlying alexipharmic terminology, as mercury is the hero and the subsidiary substances are its cavalry.

> From the maṇḍala of the brilliant moon elixir, the brilliant moon theriac rides a golden horse (brown sugar) and holds the weapon (bamboo); sustained by the armies of companions (bezoars) and their horses (agar, nutmeg, ambarella[128]), it dispels heart fevers.[129]

This ambrosia and the calcite theriac, discussed in the next section, are connected to the same Indo-Tibetan myth,[130] which appears also in the Bönpo *Vase of Amṛta Tantra* (*Bdud rtsi bum pa'i rgyud*) of the Bönpo Tantric Canon (Bka' 'gyur rgyud sde'i skor) with diverse divine protagonists.[131] The Son of the Great Sky and Earth fell in love with a Nāginī maiden and from the union of their sexual fluid, cinnabar, from which mercury is extracted, was produced along with bitumen. The interesting point is in the second part of the myth in which mercury is described as an incestuous child, bearer of poisons, a dreadful being with nine heads. The description might hint to the mythologems associated with Rāhula that can be found in Nyingma Mahāyoga sources and Bönpo literature.[132]

However, here, no explicit reference is made to Rāhula or to divine beings that belong to the Nyingma or Bön pantheons. Nevertheless, Rāhula, this nine-headed being, is associated with calamities and diseases.

The moral impurity connected to incest, and the consequent outbreaks of diseases and other calamities sent by *nyen* beings, is a

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[127] During these rituals, garuḍas and wild boars are depicted on textual amulets and are visualized in the act of devouring *klu* and *gnyan* beings. *'Chi med bdud rtsi bum pa* (1) [110r1]; *'Chi med bdud rtsi bum pa* (2) [152/11]. *'Chi med bdud rtsi bum pa* (1) [117r3–117v6]; *'Chi med bdud rtsi bum pa* (2) [64/21].

[128] *Snying zho sha*. *Choerospondias axillaris*. Its fruits are considered very effective against heart disorders and conditions. See Dga' ba'i rdo rje 1995, 129–30.

[129] *'Chi med bdud rtsi bum pa* (2) [91/9–11]: *zla zil dar ya kan// zla zil bdud rtsi'i dkyil 'khor nas// gser rta bu ram zhon nas// mtshon cha cu gang bzung// kha 'dzin ghi wang dmag dpung sdebs pa ni// a ka ru dzwa ti snying zho sha rtas snying tshad sel//*. Most possibly *snying tshad* refers to the inflammation of heart muscle (cardiomyopathy).

[130] This ambrosia was produced by some drops of divine sexual fluids from the god Brahma in union with the beautiful Nāginī maiden. The correspondences of minerals to sexual fluids are recurrent topics in Indo-Tibetan alchemical literature. *'Chi med bdud rtsi bum pa* (2) [101/2–11].

[131] Walter 1986, 33–34.

[132] See Bailey 2015, 33–72.

topos that occurs in myths of the Nyen Collection (Gnyan 'bum).[133] It is also associated with cosmogonic myths such as those of the Bön *welchu* (*dbal chu*) rituals.[134]

> [Of] The Great Sky and the Dense Earth, he is the son, union of the conditioned semen and blood. Incestuous child lump of the five poisons. […] Bad omen, its name is nine faces, nine eyes […].[135]

The motif of incest in the cited Bön religious literature symbolizes pollution and is connected to specific purificatory rituals. Here, it is reworked in the section on coarse unprocessed mercury (*nyes pa rjod pa gyong la rtsub pa'i le'u*) and inserted into the overarching apocalyptic discourse about the degenerate era. Most importantly, it is aimed at illustrating why mercury—once purified or better subjugated—might eradicate diseases caused by "pollution" such as fever and *nyen* heat (*gnyad tshad*) because it is associated with the impurity of conditioned existence.

This incorporation and interpolation of the narrative element of primordial incest reflects most possibly an oral tradition that found its way into this literature. The Indic alchemical origin myth of mercury[136] is here intermingled with indigenous patterns, in accordance with strategies that have been adopted in a similar way in Nyingma Mahāyoga sources.[137] The idea of sublimation is emphasized later on through an alchemical simile and inserted in a Buddhist discourse; purified mercury becomes the star-white jasmine (*kun da*), a metaphor for both semen and stainless bodhicitta.

Among the five theriacs, only mercury recipes are described in such an imaginative way, therefore emphasizing their primary role among the whole series of remedies. Subdued mercury becomes a divine protector, dispelling diseases and evil forces. The formulas of mercury theriacs are summarized in Table 3.

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[133] This is a collection connected to the cult of *gnyan* beings (Berounský 2019). On the connection of these material to the Ldong rus mi nyag, see Berounský 2022; 2023.

[134] This apotropaic ritual is performed to avert calamities that might occur in case of the birth of an illegitimate child. Orofino 2015, 382–83.

[135] These are just a few lines from a longer passage. *'Chi med bdud rtsi bum pa* (2) [88/15–19]: *chen gnam dang 'thug po sa// srid pa' khu khrag'dus pa'i bu// nal bu dug lnga rang gong yin//*[…] *ltas ngan kha dgu mig dgu zer//*.

[136] White 1996, 184–202.

[137] Cantwell, Mayer 2008, 289–312.

2.1.4. Limestone Theriac

Limestone (*chong zhi*) is said to cure the 404 categories of diseases described in Tibetan nosology, playing the role of a potent panacea (*dkar po chig thub*, meaning "white panacea"). In the *Vase of Amṛta*,[138] limestone minerals are divided into two main categories: male (*pho cong*) and female (*mo cong*). Each category is subdivided further into four diverse classes according to specific similes.

The male type can (1.) be similar to a horse's tooth (*rtsa'i so 'dra ba*), (2.) resemble hematite ore (*sbal rgyab*), (3.) resemble a frozen scale (*'khyag sag*), and (4.) be similar to a piece of crystal (*shel bcag pa*).

Female limestone can (1.) be similar to a piece of fat and distinguished according to color (white, yellow, blue, black, or crystal colored), (2.) be similar to a snow egg (*kha ba sgong ba*), (3.) resemble a needle (*mo khab*), and (4.) be like a frozen scale or a piece of butter.

To be used as a medical substance, limestone has to "be subdued" (*'dul ba*) according to the gentle or "pacifying method" (*zhi 'dul*) or through the "fierce method" (*drag 'dul*) and "cold or hot methods" (*tsha 'dul; grang 'dul*). It should be prepared by undergoing the same ten phases as mercury (removing oxides, expelling poisons, smoothening, trituration, inducing bliss, protection, storage, increasing the potencies, union with assisting potencies, and countermeasures). Here, we also find references to meditation and breath control and yantrayoga postures (*rtsa rlung 'phrul 'khor*) associated with the cure.[139]

Once purified, it can be used to pacify a wide range of diseases and has multiple curative purposes, which are organized in the following categories: (1.) disorders of wind, bile, and phlegm (*nyes pa gsum nad*); (2.) chronic conditions (*gcong nad*) such as metabolic disfunction (*ma zhu ba*) that can lead to the phlegm disorder known as iron slag (*lcags dreg*),[140] esophagastric masses such as bezoars (*lhen skran*),[141] and edemas at various stages (*rkya sbabs*, *dmu 'or*); (3.) "white and brown phlegm" (*bad kan skya smug*) and infectious biliary disease (*mkhris rkyugs* [*rgyug*]); (4.) cerebrospinal fluid leakage (*klad 'dzag*); (5.) impairments and disorders of the sense organs (*sgo lnga bcos*); (6.) tooth decay (*so rul*); (7.) disorders and diseases affecting the organs such as heart-wind disorder (*snying rlung*), blood and heat in the heart (*snying la khrag tshad*), pulmonary edemas due to cold disorders (*glo la grang*

[138] *'Chi med bdud rtsi bum pa* (1) [124v3–4]; *'Chi med bdud rtsi bum pa* (2) [101/12–17].
[139] *'Chi med bdud rtsi bum pa* (1) [122r4–6];*'Chi med bdud rtsi bum pa* (2) [107/21–108/11].
[140] *Bad kan lcags dreg* is a phlegmatic disorder due to the accumulation of thick mucus similar to iron slag in the stomach. It causes indigestion and vomiting (Byams pa 'phrin las 2006, 512).
[141] Masses of undigested food and material accumulated in the central chest area below the breastbone (*lhen*). See Byams pa 'phrin las 2006, 1009.

ba'i skya rbab), hepatic diseases (*mchin nad*) and brown phlegm (*bad kan smug po*), renal diseases (*mkhal nad*) such as fevers due to trauma (*'grams pa*) to the kidney vessels, bladder stones (*rde'u nad*), and renal disease affecting virility; (8.) skin diseases (*lpags nad*); (9.) different kinds of poisoning (*dug nad*); and (10.) rejuvenating and life-prolonging benefits. See Table 4 for limestone theriac recipes.

2.1.5. Saxifrage Theriac

Saxifrage theriac is endowed with the ability to pacify and expel diseases (*zhi sbyong*), and it is also called the "goddesses' heart blood," the "vajra-hook that sustains life" (*srog 'dzin rdo rje'i lcags kyu*), and the "lasso of ambrosias that sustains life" (*srog 'dzin bdud rtsi zhabs pa*). The flower of saxifrage is described in our text as a golden flower with gleaming petals, which grows in cool places such as snowy slate mountains (*g.ya' ri*) and should be collected by a young and pure girl from the eighth to the fifteenth day of the waxing moon during the middle month of autumn. Due to its cooling nature and bitter taste, this substance is considered particularly effective in cases of fevers and diseases of bile, which, if not treated in time, will result in far more serious and incurable morbid conditions referred to as the "yellow (or white) and black *kṣaya*" (*smin pa ksha ya ser nag gnyis*). The Sanskrit term *kṣaya* here is used to describe conditions of physical depletion or consumption (*zad byed*; *skem nad*) due to untreated hepatobiliary diseases, whose classification is mostly consistent with the canonical descriptions provided by classical medical literature.[142] The typical signs of bile diseases are those characterizing the two macro categories known as "heat-bile disorder" (*tsha mkhris*), which is due to an excessive increase of blood and bile, and "cold-bile disorder" (*grang mkhris*), which is a metabolic disorder due to the weakening of digestive heat caused by the combination of phlegm and wind, thereby leading to the dispersion of gallbladder bile. The treasure text touches upon the diagnosis of three more nosological categories. The first one is a condition due to some kind of obstruction of the excretory pathway of bile that causes gallbladder bile mixed with hepatic blood to flow out (*mkris kha lud mchin pa'i khrag dang 'dres*), spread by wind through the vessels.[143] The subsequent one manifests when bile

[142] Compare with the *Rgyud bzhi* [117/1–125/8]. This condition is described in āyurvedic sources as a depletion of sexual fluid, which is strictly connected to the wider category of consumption (*yakṣmā*). See the third chapter of the *Nidānasthāna* section of the *Carakasaṃhitā* on *yakṣmā*. Scholars have often aligned this disease with phthisis or tuberculosis.

[143] *'Chi med bdud rtsi bum pa* (2) [94/20–23]: […] *kha lud mchin pa'i khrag dang'dres/rlung gyis sna drangs lus la byer//*. This condition can be determined by diverse causative

invades the locations of other humors (*gnas 'gyur*) and the digestive system (*mkhris nad gzhan du zhugs pa*). It is described as the proliferation of blood, water, and bile of both colon and liver, which will affect the small intestine (*rgyu ma*). It is also said that buzzing sounds come from the gastrointestinal tract, as if there was an insect inside the body.

The last one is an epidemic disease that affects the liver and the biliary tract and duct (*rtsa rgyug rims nad mkhris par babs pa*), which spreads quickly throughout the body carried by the wind through the vessels (*rlung gyis kha sgyur rtsa ru khrid*).[144] Bile disorders can be explained through the progressive deficiency or dysfunction of the five subcategories of bile.[145]

The described bile diseases become chronic (*yun ring smin rgyas lus la ljen*) and can determine the *kṣaya* conditions. The yellow *kṣaya* is described as the aggravation of the previous condition, which leads to weakness, body and mind indolence, and a complete deficiency of sensory faculties. The black type is a mortal disease characterized by dark complexion (*mdog nag*), leaking ulcerating abscesses resembling a walnut (*rma shu'i kha chu ser rtar*[*star*] *ka*) that are smoky dark red in color like they were washed with charcoal (*kha mdog dmar nag sol 'khru 'dra*), acral lesions such as black spotted nails (*sen mo nag thig chags*), and madarosis (*mig spu 'byi*). The central therapy consists of a potent emetic procedure that draws out proliferated bile and blood (*stod 'dren shes bya ba bdud rtsi*)— expelling bile that lodges itself in the gallbladder (*mkhris snod du lhung*) and the stomach (*pho ba khar gzer; pho bar babs*) and affects the area of the diaphragm (*mchin dri*).

Table 5 provides details on the recipes. The next subsection offers a few examples drawn from the portion devoted to the saxifrage theriac to illustrate once again the encoded terminology of the treasure text.

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factors, including the presence of abnormal masses formed in the body such as gallstones (*mkhris skran*), hepatic calculi (*mchin skran*), and bezoars of the stomach (*pho skran*). For a detailed description of this condition and its relation to those abnormal growths blocking, see *Rgyud bzhi* [117/10–12].

144 *'Chi med bdud rtsi bum pa* (2) [95/3–4].

145 The five life-sustaining types of bile of the seven bodily constituents (*zungs kyi mkris lnga; lus zungs kyi mkris lnga*) are digestive bile (*'ju byed mkhris*), complexion-clearing bile (*mdog gsal mkhris*), accomplishing bile (*sgrub byed mkhris*), sight-producing bile (*mthong byed mkhris*), and color-transforming bile (*mdangs sgyur mkhris*). Their deficiency causes difficult digestion (*'ju dka'*), loss of appetite (*dang kha mi bde*), a weak and heavy body (*lus lji la shed nyams chung*), sight impairment and yellowish eyes, dark complexion and rough skin (*sha lpags sngo nag rtsub*), and cardiopulmonary heat (*glo snying tsha*). See *'Chi med bdud rtsi bum pa* (2) [94/15–20].

2.1.5.1. Six Secret Saxifrage Theriacs to Cure the Biliary Disease

The main section on recipes and therapies is supplemented by a short exegetical key (*lde mig*) [146] clarifying an obscure passage on the following six encoded formulas and procedures to cure contagious biliary disease (*rtsa rgyug*):

1) "Cutting the poisonous tree" (*dug sdong bcad*) to eradicate the infection: This is achieved by applying "the six axes that cut at the root the poisonous tree" (*sta re drug gis dug sdong rtsad gcod pa*), which is a mixture of mercury, aconite, chebulic myrobalan, musk, guggul oleogum resin, and sulfur used to prepare pills administered with an infusion of barley beer and locoweed.

2) "Extinguishing the bonfire" (*me dpung bsad*) to prevent fevers: This refers to the "six great cooling medicines that subjugate fevers" (*bsil chen drug tshad gting nas gzhil ba*). It is described as a decoction made with powdered saffron, saxifrage, feverpod jasmine, gentian, hypecoum poppy, bitumen, and bitter gourd.

3) "Protecting from fears" (*'jigs bsrung*) or "barricading dangerous pathways to prevent thieves from entering" (*'jigs 'phrang kha dgag mtshang can rkun ma ma zhugs*), meant to protect organs: The "six heroes" (*dba' bo drug*) and the "six good substances" (*bzang drug*) close the dangerous pathways.

4) "Pouring out the vomit" (*ngan skyugs dbo*) to eliminate abnormal humors: An emetic called the "six fast legs" (*rkang mkhyogs drug*) made of spurge, cyananth, [147] stellera, castor oil, prostrate spurge,[148] and *Śrīkandā*[149] is prescribed.

5) "Dispatching the watchers" (*so ba kye)* to cure the disease in a resolute way: A compound of the "six watchers" (*so ba drug*) that includes aromatic calamus or sweet flag administered with cow's milk or butter; black hogweed[150] and honeysuckle infused in barley beer; and an electuary made of musk, guggul gum resin, and sugar is concocted.

6) "Summoning prosperity" (*g.yang du dgug*) to prevent the reoccurrence of the disease: This refers to the "six ministers" (*blon po drug*) medicinal butter made with brown chiretta and five other

[146] *'Chi med bdud rtsi bum pa* (1) [55v4–56r6]; *'Chi med bdud rtsi bum pa* (2) [100/1–101/1].

[147] *Sngon bu, Cyananthus sherfii*. Dga' ba'i rdo rje 1995, 195.

[148] *Khron bu*. *Euphorbia stracheyi* or small *euphorbia* (*thar nu chung ba*). See Dga' ba'i rdo rje 1995, 97; Karma chos 'phel 1993, 207–8.

[149] Type of spiny gourd, *Momordica dioica*. It is also identified as white sandalwood (*btsan ldan dkar*) in Byams pa 'phrin las 2006, 919–20.

[150] *Spru ma*. See note 207.

substances (feverpod, the three myrobalan fruits, and bitter gourd)[151] to dispel a residual former disease and "transform it into vital strength of the body" (*nad lhag zungs su bsgyur ba*).

Medical knowledge here is arranged in metaphors drawn from military and ritual imaginary and language. The disease is like a thief or an enemy that assaults the body, the medicines are like soldiers or watchers that protect the organ-fortresses,[152] and the practices are like rituals to bring back good fortune (*g.yang*).

Before moving on to the *Great Measure of Gold*, a few points will be restated. As seen, the five theriacs can be used to cure venoms, poisoning, and a wide range of illnesses spanning from chronic conditions to contagious diseases. Other benefits of theriacs include rejuvenating and life-prolonging properties (mercury and limestone theriacs), the curing of renal disorders that cause anaphrodisia and infertility (limestone theriac), apotropaic (mercury, limestone, and locoweed theriacs), and transmutative virtues (locoweed theriac).

The importance of these formulas summarized in the tables lies in the clear connection to both Greco-Arabic and Indian medical traditions. I shall return to the *materia medica* in the conclusion to restate the similarities.

3. Two Theriac Remedies Preserved in the Great Measure of Gold

In this section, I analyze the two theriac traditions preserved in the late fourteenth-century *Great Measure of Gold,* with particular attention to nosological terminology. The first theriac tradition has its origin in the medical lineage connected to Atiśa Dīpaṃkara Śrījñāna (Jo bo rje, eleventh century), to whom the *Remedy to Cure the Febrile Diseases of the Biliary Duct* is ascribed.[153] The association of medical knowledge with Atiśa and his master Dharmakīrtiśrī (Gser gling pa) seems to be well attested in Tibetan literature.[154] Moreover, the theriac remedy is said to have been passed down by Yutok Gyelbum (G.yu thog rgyal 'bum) through the Drangti medical lineage.[155] Atiśa's recipe is prescribed to cure epidemic diseases (*dal yams*) due to the combination of *nyen* and fever (*gnyan dang tshad nad sdong pa yin*) and is divided in three

[151] *Tig ta drug pa'i sman mar*. See *'Chi med bdud rtsi bum pa* (1) [56r5] and *'Chi med bdud rtsi bum pa* (2) [100/17–19].

[152] On the association of human organs and the links of internal physiology with landscapes and fortresses, see Simioli 2019.

[153] *Jo bo rje'i mkhris rims bcos thabs*, in *Gser bre chen mo* [239/1–243/9].

[154] *Slob dpon klu sgrub kyi sman yig gces btus*, Bod kyi gso ba rig pa'i gna' dpe phyogs bsgrigs dpe tshogs, A ru ra, ed. vol. 73. Beijing: mi rigs dpe skrun khang, 2008.

[155] *Gser bre chen mo* [241/17–21].

categories. The first is called "intermittent pain and the disease characterized by pustules resembling doe spots" (*gzer thung yu mo*). Here, the author offers only a diagnosis of preliminary signs. However, as we can infer from information provided by the *Vase of Amṛta*, "intermittent pain" is a pulmonary disease characterized by fever and, in its most virulent form, by a swollen neck area at the cervical vertebra and swellings at the scapula, lips, nails (fingertips), palms, and soles.[156] The term *yu mo* can refer to diverse kinds of swellings, such as round pebble-like pustules, dribbling swellings, or "wind-emitting" pustules.[157]

The second is known as a composite condition called "arching nape that causes collapse" (*ltag 'gyel cog 'gyel*), which was introduced in Section 2.

The third condition is "contagious biliary disease, which manifests the same signs of poisoning" (*mkhris rims dug thabs*).[158] The physiopathology of these biliary diseases includes an injured gallbladder, jaundice, fever, headache, and diffused pain throughout the torso, but also consumption, nose bleeding, and gangrene of acral areas. It can lead to madness and death.[159]

According to the text, while the second definition corresponds to the etiological description transmitted in unspecified Zhangzhung medical literature, the last one corresponds to a Tibetan taxonomy. The text also refers to Chinese and Indian terminology, which are

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[156] *Gzer thung* refers to a virulent disease (*gnyan nad*) that affects the upper torso and manifests as pulmonary fever (*glo tshad*), which causes intermittent chest pain, difficulty breathing, and a sort of rattling (*skad ngan*) (Byams pa 'phrin las 2006, 792). This infection of cervical vertebra is often associated with the *gzer thung* condition, as can be inferred from the description provided in the *Vase of Amṛta*. According to this text, physical signs of this disease include some sort of deformation or rigidity of the hands, comparable to "the hand gestures of dancers." Moreover, when this condition is very severe, in the sense that it is associated with what is called *gnyan* (*gnyan can*) or in other words has a contagious nature, it is characterized by a swollen neck at the cervical vertebra and so forth. See *'Chi med bdud rtsi bum pa* (2) [120/15–20]: […] *spyir yang gzer thung mtshan nyid ni/gar mkhan lag pa'i phyag rgya'dra/ de la gnyan can gnyan med gnyis/ gnyan med rgyas tshad 'khrugs pa/ gnyan can an stong na'm rno* [*sbo*]*/ sogs* [*sog*] *pa steng de bzhin te/ lce mchu so sen mthil bzhi'o//*. The emergence of a swollen neck and scapula could be linked to some sort of infection of lymph nodes caused by microorganisms.

[157] *Yu mo* refers to an infectious disease characterized by spotted pustules of the three described types (*gram bu lus po phal cher, chu 'dzag, rlung 'bud*). See for example *'Chi med bdud rtsi bum pa* (1) [111v4–112v1]; *'Chi med bdud rtsi bum pa* (2) [176/1–77/1].

[158] *Dug thabs*. These diseases exhibit the same symptoms as poisoning; they affect the stomach and liver, causing emaciated and blackened skin. *Bod rgya tshig mdzod chen mo* 1999, 1259.

[159] *Mkhris rims*. Several diseases are subsumed in this category, such as *le brgan, rtsa rgyug rims nad, smin pa ksha ya ser nag gnyis*. *Gser bre chen mo* [239/13–240/1]. See previous sections on myrobalan and saxifrage.

respectively "the diseases that if cured quickly does not curve the body" (*myur bzang ma gug*) and the "earth disease of dark brown color" (*sa nad smug po*).[160]

To counteract these diseases, the remedy is a "meat theriac recipe" (*sha dar ya kan*)[161] that should be prepared as follows: the flesh of a toad[162] (its eyes or head); the flesh of a blue snake; pigeon flesh;[163] the flesh of a man who died by stabbing; the calcinated ashes of diverse types of aconite (white, black, red, and yellow); and triturated paste from the six categories of camphor: Aśvagandhā,[164] black stellera, white camphor (which corresponds to the snow-drop mineral),[165] black camphor (calcinated garlic), brown camphor (musk), blue camphor (saxifrage), and the camphor tree (real camphor).[166] These substances should be mixed with the urine of a child, which is a potent vehicle. The text also describes the specific potencies of substances. Some substances are febrifuges (calcinated garlic protects from fever of vital organs; musk protects from hepatic fevers; camphor tree also cures fevers); others are used to cure bile disorders and an injured gallbladder (saxifrage and prostrate spurge cleanse the gallbladder and reduce bile).

The second theriac remedy described in this source is associated with a controversial figure known in Tibetan literature as "Confucius, the King of Magic" (Kong rtse 'phrul gyi rgyal po) and the author of the *Guideline Instruction Composed in Accordance to the Received Oral*

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[160] It could refer to an infectious disease caused by *klu* and *sa bdag*. Byams pa 'phrin las 2006, 928.

[161] See also Simioli 2024.

[162] *Sbal nag*. A toad identifiable with *Bufo bufo gargarizans*, widespread throughout China. Dga' ba'i rdo rje 1995, 381. Its meat has a sweet taste and a hot post-digestive taste and is considered very efficacious against infectious diseases and poisoning.

[163] *Phug rong*. *Columba rupestris*. Dga' ba'i rdo rje 1995, 367. It reinforces the immune system, increases the production of reproductive semen (*lus stobs skyed khu ba 'phel*), and cures epidemic diseases affecting the upper respiratory tract and the lungs (*glo ba dang gre ba'i rims nad sel*).

[164] *A sho kandha*. It is also spelled as *a shwa kandha.* See Karma chos 'phel 1993, 170. In āyurvedic literature, this plant is usually identified as *Withania somnifera*. According to Dga' ba'i rdo rje (1995, 320) and the *Great Dictionary of Tibetan Medicine* (Byams pa 'phrin las 2006, 1018), it can also be identified as *ba spru* (*Mirabilis himalaica*).

[165] *Gangs thig*. This is a mineral substance that is very similar to the female type of limestone (*mo cong*). This is a stone of globular earthy formation derived from the mixture of stony particles and drops from melted glacial snow; similar formations are due to the precipitation of minerals from water dripping from the ceilings of caves. This mineral is used to cure purulent secretions (*snag dang chu ser 'dzag*) and cerebral injuries due to wounds (*klad par rmas skyon shor ba*); it is particularly effective against hepatic fever (*mchin pa'i tsha ba*) and sight impairments (*mig shed nyams pa*) (Byams pa 'phrin las 2006, 95–96).

[166] *Mang ga pur*. *Dryobalanops aromatica*, commonly known as Borneo camphor, camphor tree, Malay camphor, or Sumatran camphor (Dga' ba'i rdo rje 1995, 97).

Teaching to Prepare the Theriac Authored by Confucius King of Magical Arts.[167] Confucius is usually linked to the development of divinatory practices in both Bönpo and Buddhist sources, where he is depicted as the originator of the *to* (*gto*) ritual. Here, he is an alchemist from Uḍḍiyāna (O rgyan yul), which is usually identified as the Swat valley in modern-day Pakistan.

Confucius's theriac is a mercurial compound realized by mixing mineral, metallic, and herbal substances such as calcinated black mercury sulfide (*dngul chu bsreg pa'i thal*), calcinated gold, sulfur, black aconite, myrobalan, peach stone fruit (*kham bu'i rtsi gu*), white sweet flag, fern, saffron, snow lotus,[168] *Corydalis*,[169] the pokeweed "yellow hero,"[170] as well as animal and human excrement and offal (purported to be endowed with magical virtues), including peacock's brain, liver, and bile; marmot's liver (*'phyi ba'i mkhris pa*); a widow's menses (*yug mo's mngal khrag*); the flesh of a man who died by stabbing; and the feces and urine from a powerful tantric practitioner (*sngags pa nus pa can*). Stored in a vase sealed with wax, the remedy should be consumed with food regularly to eliminate any chronic disease due to poisoning or to protect oneself from the threat of poisoned food.

The most significant elements that emerge from the previous description are the usage of animal meats as key ingredients and the terms used to identify diseases in diverse medical traditions. As anticipated before, in the Tibetan pharmacological tradition, "flesh compounds" (*sha sbyor*) are usually aphrodisiacs, in which medicinal herpetofauna plays a central role. Here, however, they are attributed with antipoisoning potencies as in other pharmacological traditions.[171] With regard to the second point, multiple terminological definitions drawn from diverse medical traditions are brought into play to identify an epidemic disease of a hepato-pulmonary nature. The etymological classification of the "arching nape" disease (*ltag 'gyel* [*dgye*] *cog 'gyel*)—which is pivotal in the context of the *Vase of Amṛta*—as a Tibetan rendering of a Zhangzhung word is interesting but should be scrutinized.

As seen so far, theriac formulations appear in Tibetan medical collections around the tenth century as an antidote to poisons, fevers, and infectious diseases, and as a topical remedy. In the subsequent centuries, they are attributed with the same therapeutic effects but

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[167] *Rgya kong rtse 'phrul gyi rgyal pos mdzad pa'i dar ya kan gyi sbyor ba'i zhal gdams dkrol nas lag len mdzib khrid du bstan pa,* in *Gser bre chen mo* [172/12–173/17].

[168] *Yu gu shing. Saussurea epilobioides,* also known as saw-wort daisy. See Byams pa 'phrin las 2006, 810–11.

[169] *Su mi.* A plant of the genus *Corydalis*. See Dga' ba'i rdo rje 1995, 203.

[170] *Dpa' bo ser po. Phytolacca acinosa*. See Dga' ba'i rdo rje 1995, 231.

[171] See note 161.

acquire the role of anti-epidemic recipes. They became part of the medico-alchemical traditions associated with religious figures under whose names they have been transmitted. The archaic terminology of "arching nape" (*ltag dgye*), which here is said to derive from Zhangzhung, and which appears in Dunhuang manuscripts (see note 95), might point to the connection to the earlier phase of transmission of this medical knowledge. The same terminology and the related knowledge were crystallized in the *Vase of Amṛta,* which, as said before, preserves Bön materials. Moreover, the association with geographic areas and the connection to Atiśa, and by extension to the Zahor medical tradition or to some kind of medical knowledge transmitted by his Sumatran master, might reflect the connection with medical knowledge from Swat, Bengal, or from Southeast Asia via Persian merchants and sources.

4. Conclusion

This paper offers preliminary findings on the history of theriac recipes in the Tibetan cultural context during the thirteenth and fourteenth centuries. The discussion of etiological models and pharmacological formulas demonstrates that theriacs in Tibetan sources were considered ultimate panaceas against plague, communicable diseases, and conditions of a very severe nature. Although the study does not deal with the recent epidemiological issue regarding the history of plague and the role of Mongol expansion in its transmission, it should be said that, as we can infer from the *Vase of Amṛta*, an outbreak of pestilence may have occurred during the Mongol invasion of Central and Eastern Tibet.

At this stage of research, identifying the described diseases with certainty is not possible. However, Tibetan etiological discourses on contagious hepatic and biliary diseases, pulmonary conditions, diseases characterized by pustules, buboes, and blackened skin point to nosological categories that could align with modern descriptions of the bubonic plague.

No direct connection could be established between the examined texts and precise Greco-Arab sources, but a deeper comparison would make for fascinating future research. My preliminary observations reveal some parallels between the ingredients, the preparations, and the therapeutic uses described in the analyzed sources and the following Greco-Arabic sources. For example, the *materia medica* may be compared to the formulas preserved in the quoted treatises of the Galenic corpus, Byzantine epitomes, and the Arabic literature such as

Avicenna's *Kitāb al-Qānūn fī al-ṭibb* and Ibn Jujul's *Maqāla fī adwiya al-tiryāk.*[172]

The analyzed texts prescribe the administration of certain categories of *materia medica* that were largely used in diverse cultures to prepare theriacs in the form of syrups, decoctions, medical wines, and ointments, as well as powders administered with decoctions. In multiple cases, the administration of medicines was associated with external therapies such as emetics, bloodletting, and cauterization, which were practiced in both the Greco-Persian and Indian medical traditions to eliminate blood infections caused by widespread diseases and the accumulation of abnormal humors.

Further and more detailed intertextual research on the contents of these sources might allow us to better understand the historical connection between diverse medical and religious traditions and the interpolation of Bon-Buddhist literary materials preserved in the *Vase of Amṛta,* which encapsulates archaic terms, mythological lore, and rituals. Buddhist lineages of transmission in Tibetan medical collections served as models to corroborate a doctrine and consolidate a tradition.

If analyzed through the lens of an historiographical orientation to investigate the globalization of knowledge in history, then the *long journey* of theriaca will certainly allow us to trace the history of medical and pharmacological practices and ideas that circulated among cultures in Eurasia.

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Table 1. Myrobalan Theriacs

Recipes	**Therapeutic and Apotropaic Uses**	**Associated External Therapies**
sman mchog (*a ru rag ser mdog*),[173] *sle tres*	*rlung rims*	
sman mchog, dug mo nyung ba, hig hig	*mkhris rims*	*ru thung*[174] *rngul dbyung*[175]
sman mchog, se 'bru, ma nu	*bad rims*	*hor gyi me tsha*[176]
sman mchog, gi wang, cu gang, bu ram, ka ra'i phye ma	*le brgan*	
sman mchog, gi wang, cu gang, bu ram, ka ra'i phye ma	*klad gzer*	
sman mchog, ba le ka, bong nga dkar po	*rmongs bu*	
sman mchog, cu gang, a krong, sro lo, gla sgang, li ga dur, ru rta, shing mngar	*glo rims*	*glo rtsa 'doms rtsa,*[177] *ru thung sogs nad rigs dang bstun gang la gtar*
sman mchog, tig ta, hon glen, ba sha ka, tsan ldan gnyis (*thang*; decoction)	*khrag rims*	*gtar*

[173] Golden myrobalan is referred to as *sman mchog* or "supreme medicine."

[174] Bloodletting points located at the forearm (*lag ngar*) and four fingers from the latter epicondylitis of the elbow joint (*gru mo'i gzhu mchog*; Byams pa 'phrin las 2006, 852).

[175] Sweating therapy (Byams pa 'phrin las 2006, 193).

[176] Mongolian moxibustion (Byams pa 'phrin las 2006, 1002). The herbal compress (containing nutmeg and cumin) wrapped in cotton clothes and dipped into warm oil (melted old butter; *rning mar khu*) is then applied to moxibustion points of wind along the body. The four secret points are located at the first cervical vertebra (*an stong tshigs pa dang po*), at the sixth vertebra (*tshigs drug pa*), at the sternal point in the middle of the black and white points of the two nipples (*brang gzhung dkar nag mtshams)*, and the moxa point at the throat cavity under the Adam's apple (*ske stong*; Byams pa 'phrin las 2006, 869).

[177] *Glo rtsa 'doms rtsa*. (1.) The bloodletting vessel at the confluence of the superficial vessel of the lungs and the *ru thung* bloodletting vessels of the liver (*glo mchin 'doms rtsa*). This point is located behind the wrist where the mentioned vessels meet. (2.) The bloodletting vessel at the confluence of lungs and heart (*glo snying 'doms rtsa*), which is located four fingers upwards from the upper angle of the wrist joint (Byams pa 'phrin las 2006, 122).

Table 2. Locoweed Theriacs

Recipes	Therapeutic and Apotropaic Uses
sha rgyal,[178] *se 'bru, gur gum, dzā ti*[179]	*nyes pa snyong par byed*
sha rgyal, thal ka rdo rje,[180] *gla rtsi*	*mdze nad, gdon*
sha rgyal, shu dag	*'jams dpal gyi shes rab*
sha rgyal, gu gul, mu zi, gri shi, gla rtsi, spru nag, shu dag, sgo skya, bong nga rnam pa dgu lto ru bza' shing lus la bcang / dud pa bdug […] *sgo la btags phyug*	*'gos rims, gdon*
sha rgyal, bong dkar lo ma, a ru, mar gsar, nu 'thung khyi'u'i chu	*sha dug, sbyar dug, btsan dug*
sha rgyal, tshos, zhu mkhan, tsha la bzhi po blangs ba'i khu ba la lhang mtsher, bya rog nor bu, rgya snag, rta'am dre'u khrag	*gser gyi dri ma'am na yang dgos btab zhag gsum zhu*
sha rgyal, rak ta	*bu tsha thub*
sha rgyal, lug ru ser po, mar	*bu tsha thub*
sha rgyal, ru rta, gla rtsi, gu gul nag	*gag lhog, gnyan rigs*
sha rgyal, lug mchin, btso'i mar	*spyan mig 'ug pa lta bu*
sha rgyal, lug mchin, pho ba ris	*spyan mig 'ug pa lta bu*
sha rgyal, dug nyung, tig tsha ser po dmar po gnyis po, bu med skyes pa'i khyi'u nu ma zho	*mig tshag sel*
sha rgyal, mar khu	*rna ba gseng bar 'gyur*
sha rgyal, la phug, sga skya phye ma gnyis btso ba'i khu ba la shing kun btab	*rna gyen la brtan bsdad*
sha rgyal, yung dkar nag, rgya tshwa, shing mngar, mar nag, sbyar spos	*rlung nad gyis mgo 'khor, rna 'ur mtshul gags sel*
sha rgyal, nag mtshur, a ru ra, seng khrom [*phrom*] (*grang thang*; administered as a cold decoction)	*kha rnyil lce so'i tsha ba*
sha rgyal, Ug chos, dud pa [dud dreg] bul tog, a ru ra, thar nu, re lcag (*chang la skol*; administered as a medicinal wine)	*glang thabs*
sha rgyal, pi pi ling,[181] *bu ram* (*ril bu*; administered as a pill)	*dri ma 'gags pa sel*
sha rgyal, pi pi ling, nyi dga', sdig srin, sug smel, gla rtsi, se 'bru, rgya tsha, bu ram (*chang la btab pa*; infused in barley beer)	*chu gegs sel*
sha rgyal, gang ga chung	*nyes pa gsum, mgo nad*

[178] Locoweed occurs in most formulas as *sha'i rgyal po* or the "king of meats."
[179] Only in *'Chi med bdud rtsi bum pa* (1) [84v6].
[180] *'Chi med bdud rtsi 'bum pa* (1) [84v6]: *klu bdud rdo rje*.
[181] *'Chi med bdud rtsi bum pa* (1) [86v1]: *sna ring*.

sha rgyal, gur gum, gi wang, tsan ldan, cu gang, tig ta, hong len, ba sha [*ka*], *bong dkar, ka ra, gangs chu*	*don snod glo mchin grag mkris rims, tsha lpag ser rnyung ma lus gsod*
sha rgyal, dbyi mong dkar po, pho ba ris, rgya tshwa, rgyam tshwa, pi pi ling, cong zhi thal bsregs, lug dregs [*lugs dreg*],[182] *ze tsha, shin kun la sogs, chang*	*grang ba chu ser*
sha rgyal, sgo skya, ka ra	*cham pa, bad kan, byang khog skran*
sha rgyal, lo brgyad chu	*gag pa, 'brum bu*
sha rgyal, a krong, me tog gsum pa, cu gang	*rkon, gag pa*
sha rgyal, rta dkar chu	*rgyu gzer, byi rims*
sha rgyal, ra'am bu med 'o ma la ska sla zho tsam (*bsku*; ointment)	*log pa, skrangs nad*
sha rgyal, mi rgyus,[183] *'o ma, shu 'bras* […] (ointment)	*me dbal, rma rnying, rmen bu*
sha rgyal, spang rtsi do bo, 'bri mog, chu rtsa, mkhris pa sna tshogs (ointment)	*me dbal, rma rnying, rmen bu*
sha rgyal, bu chung gi bdud rtsi (*lde dgu*; electuary)	*rma ba*
sha rgyal, dom mkhris, bud med zho (ointment)	*lpags nad, rma ba*
sha rgyal, lcum rtsa, yu mo mde'u'byin, mdze tsha, chang	*bu dang bu ro thon*
sha rgyal, dur byid, thar nu, re lcag, zab lag can, dri chu	*skyugs 'chad pa*
sha rgyal, tha ram, na ram	*'khru ba 'chad pa*

Table 3. Mercuric Theriacs

Recipes	**Therapeutic uses**
zla zil bdud rtsi, bu ram,[184] *cu gang, gi wang, a ga ru, dzā ti, snying zho sha*	*snying tshad*
zla zil bdud rtsi, shing mngar, a krong, ru rta	*glo tshad*
zla zil bdud rtsi, pri yang, brag zhun, Ut pal	*mchin tshad*
zla zil bdud rtsi, pi pi ling, li shi, gser me	*mtsher tshad*
zla zil bdud rtsi, a ru gser mdog, sug smel, brag zhun	*mkhal tshad*
zla zil bdud rtsi, pri yang [*ku*], *bong nga dkar po, dom mkhris*	*pho tshad*
zla zil bdud rtsi, dom mkhris, kyi lce, bong nga dkar	*snod tshad*

[182] *'Chi med bdud rtsi bum pa* (1) [86v5–6]: *cong zhi bsregs thal lugs dreg* [*zangs dang ra gan lugs su blugs pa'i sgur ba*].
[183] *'Chi med bdud rtsi bum pa* (1) [87r4]: *mi rus*.
[184] *'Chi med bdud rtsi bum pa* (1) [91v2–3]: *gur gum*.

zla zil bdud rtsi, li dur [*li ga dur*], *shing mngar, re skon*	*rtsa shad*
zla zil bdud rtsi, sbal rgya, gangs tig	*rus tshad*
zla zil bdud rtsi, tig ta, dug nyung, bong ngar	*mkhris tshad*
zla zil bdud rtsi, dzā ti, sgo thal, sle tres	*rlung tshad*
zla zil bdud rtsi, star bu, se'bru, bse yab	*bad kan tshad*
zla zil bdud rtsi, spang rtsi, ba sha [*ka*], *re skon, hong len*	*khrag tshad*
zla zil bdud rtsi, par pa ta, lug mur, gser me	*rims tshad*
zla zil bdud rtsi, re skon, sro lo, par pa ta, 'jib rtsi, sgong thog, rta lpags, spang rtsi do po, par pa ta, sngo sprin	*rims tshad*
zla zil bdud rtsi, 'bri mog, seng 'phrom (*zhu mkhan*)	*'grams tshad*
zla zil bdud rtsi, gang ga chung, btsod, bong nga dkar	*khrag tshad*
zla zil bdud rtsi, rtsa mkhris, bong dkar, skyer pa	*mkhris tshad*
zla zil bdud rtsi, bya rgod spos, tsan ldan dkar	*snying tshad*
zla zil bdud rtsi, ser mtshur, stag sha, phur mong thal (*phur nag*), *'gron thal,*	*byang khog rnag khrag*
zla zil bdud rtsi, A byag, dug nyung, spru rtsa	*khong gnyan*
zla zil bdud rtsi, chig thub, spru nag, stag sha	*gag lhog*
zla zil bdud rtsi, gser [g.yer] shing, sran ma, tshod	*'brum nag*
zla zil bdud rtsi, 'gron thal, zi ra dkar po, cong zhi, bzang drug, 'bras bu gsum, tsan ldan gnyis, sor spos dkar, thal ka rdo rje, dom mkhris, ru rta, mu zi	*dmu'or, skya rbab, rnag chu, tshad rnying, rtsa nad, su rya, rtsa nad*
zla zil bdud rtsi, bzang drug, gla rtsi, tsan ldan, ka ra, gi wang, brag zhung, bse ru, bong dkar, khyung sder, skyer shun, a ru ra, ma nu, ru rta	*dug tshad*
zla zil, gla rtsi, ru rta, bsil gsum	*sha dug, sha nad*
zla zil bdud rtsi, bong dkar, ru rta, byi'u la phug	*sha dug, sha nad*
zla zil bdud rtsi, sbal rgyab, chig thub, cong zhi, mtshal	*'brum nag*
zla zil bdud rtsi, gla ba [*rtsi*] *gu gul, btsan dug, stag sha, mu zi, shu dag, lcong 'gyur sha*	*gnyan tshad bco brgyad*
zla zil bdud rtsi, byang sems gnyis, 'bras bu sum, rtsa ba lnga, gsal byed sman a ba, rtag tu ngu la sogs, da byid, rtsangs pa, sbrul gyi sha, 'bras bu'i rlig pa rigs, cong zhi, mngar gsum, zhun mar	*bcud len*

Table 4. Limestone Theriacs

Recipes	**Therapeutic and apotropaic uses**
tshil chen rgyal po,[185] *rtsi chen, ra*[*mo*] *shag, a ru, gze ma*	*rlung nad*
tshil chen rgyal, bu ram, zhun mar	*rlung nad*
tshil chen rgyal, gser me, par pa ta, hong len, shug 'bras yang na tig ta	*mkhris nad*
tshil chen rgyal, ut sngon, shug 'bras, ba sha ka, skyu ru ra	*bad kan*
tshil chen rgyal, bzang drug, skyer zhun, a ru ra, se 'bru	*mkhris rkyugs*[*rgyug*], *mkhris pa kha shor*
tshil chen rgyal, spod gnyis, se'bru, rtsi chen, ra [*mo*] *shag*	*mkhal ma la rlung nad, stod smad bad rlung rgyas zhi*
tshil chen rgyal, skyer shun, tsha la, a ru ra	*bad kan ser po'i skyon gyis mgo nad mkhris skyugs mu gor na dpral ma ldug skam byed zhi*
tshil chen rgyal, skyer shun, tsha la, a ru, sga skya, sran ma	*bad kan skya smug*
tshil chen rgyal, lcam dkar, bul tog	*ma zhu ba*
tshil chen rgyal, ru rta, big pan rtse [*tsi tra ka*][186] *gnyis ka, shing tsha, lca 'brum*	*skran nad*
tshil chen rgyal, a ru (*sman chang*; medical wine)	*skran nad*
tshil chen rgyal, tsha sna tshogs tshad, spang rtsi do bo, 'brus bu gsum	*dmu chu*
tshil chen rgyal, pi pi ling	*dmu chu*
tshil chen rgyal, se'bru bzhi,[187] *tsha bag sum, tshwa gsum*	*ma zhu*
tshil chen rgyal, se'bru bzhi, tsha ba lnga, tsha gsum	*me drod bskyed*
tshil chen rgyal, a ru, lcags phye, til mar	*mgor bskus skra mdog bung ba 'dra, klad pa 'khor zhing na ba zhi*
tshil chen rgyal, ga bur, gur gum, shing mngar	*sna nad zhi*
tshil bu, sbal rgyab chig thub gnyis/ drug sbyor khaong du rgyun btang/ (taken orally), *rma la skyi dkar co ga klad sman bdud rtsi mnan* (ointment), *dom mkhris lde gu nang du gzhug* (electuary)	*klad 'dzag gcod*
tshil bu, A ba'i khan da lug zho tsam sbyar [*sbrang*] *rtsi* (dense syrup)	*mig nad rab rib zhi*
tshil bu, 'bras bu, A ba, rtag tu ngu, lcags sbrul (taken orally)	*mig la phan*
tshil bu, spyi zhur,	*mig la phan*

[185] Encoded names that are used to refer to processed purified calcite are *tshil bu, tshil chen rgyal,* and *bdud rtsi btul ba.*

[186] *'Chi med bdud rtsi bum pa* (1) [119 v.1].

[187] Pomegranate 4 formula.

tshil bu, ru rta, mar	*sna nad shi*
bdud rtsi btul ma, sre long mgo rus [*zer mo'i mgo rus*][188] *thal*	*sna khrag 'chad pa*
bdud rtsi drag btul, a ru ra	*mchu'i bad kan*
bdud rtsi drag btul, [so'i nang la] byi tang ka bsnan	*so srin nad* *so'i gas chag*
drag btul phyed, na le sham, ru rta	*gag pa gcod*
lug mur,[189] *'bras bu gsum chu btso bya*	*snying rlung, grang ba'i nad*
bdud rtsi btul ma, dzā ti, shin kun, bu ram, kha tshar	*snying rlung*
bdud rtsi dul ma, dzā ti, ka ra, skyu ru ra mar	*snying khrag tshad*[190]
bdud rtsi, tsha ba gsum	*glo ba'i grang ba skya rbab*
bdud rtsi, sro lo, shing mngar, ba le ka, ka ra	*glo ba'i khrag tshad, glo tshad*
bdud rtsi, bong bu'i yang zho, sbrang rtsi, btul ma, ka ra	*glo la rnag chu*
bdud rtsi, cu gang, gur gum	*glo nad*
bdud rtsi, bu ram, tsha ba gsum	*mchin la grang rgyas*
bdud rtsi, ma nu, gur gum, pi pi ling, se 'bru, sug smel	*mchin tshad, bad kan smug po*
bdud rtsi,gur gum, li shi, ltsan ldan	*mchin nad*
bdud rtsi, rgya tsha, ru rta, pi pi ling, mchu snyung, dur byid, a ru, bu ram	*nad kun*
bdud rtsi btul ma, thug 'bras 'o sdus khu ba, bdud rtsi dbang lag, kha tshar	*mkhal rtsa, sa bon (ro rtsa)*
bdud rtsi, ka ra, shing mngar, 'o ma	*mkhal rtsa, sa bon (khu ba; ro rtsa)*
bdud rtsi, 'o dron	*mkhal rtsa, sa bon (khu ba; ro rtsa)*
tshil, da byid sha, rtsangs pa sha, smig [rmigs bu] sha, mchil sha, ba 'o ma	*rgas pa gso*
bdud rtsi, gla ba, sdig srin,	*mkhal rtsa la 'grangs pa'i tshad*
bdud rtsi, rgya tsha, shing tsha, rwa tshwa, sug smel, nyi dga', ka ka ru, gser phye	*rde'u nad, rgyu long la sogs pa'i nad*
bdud rtsi drag btul chu, pho ba ris (ointment)	*chu ser, lpags nad*
bdud rtsi, so ra, mu zi, thal ka rdo rje, shug tsher [*shug pa tsher ca*] (ointment)	*lpags nad, za 'phrug sel*
bdud rtsi, brag zhung, gla rtsi, spang rgyan dkar, bong dkar, 'om, snying [*snyag*],[191] *lcags khu, re ral, skyer pa*	*dug nad*
bdud rtsi, gi wang, tsan ldang bong nga gnyis, 'om bu, ldum bu, a ru ra	*sbyar dug*
bdud rtsi, gi wang, brag zhun, a ru, bzang drug, bo nga, re dal, 'om bu	*sha dug*

[188] *'Chi med bdud rtsi bum pa* (1) [120r6].
[189] *'Chi med bdud rtsi bum pa* (1) [120v2]: *lug mar*.
[190] *'Chi med bdud rtsi bum pa* (1) [120v3]: *snying ga khrag nad*.
[191] *'Chi med bdud rtsi bum pa* (1) [121v1].

bdud rtsi, bong dkar, byang [*tshwa*], *bul* [*tog*], *a ru, bya tshan gsum*	*btsa dug*
bdud rtsi, bzang drug, gi wang, ba spru dkar	*mche dug*[192]
rdud rtsi, gla rtsi, a ru, gri khrag	*gza' dug*
rgod btul, se'bru bzhi, tsha gsum, tsha ba gsum	*ma zhu*
rgod btul, tsha ba lnga, tsha gsum	*me 'dro bskyed*
rgod btul, a ru, rgyam tsha, pi pi ling	*lcags dreg*
tshil bu, a ru, bya thal	*lhan skran*
rgod btul, tsan ldan, mu tig, skyu ru ra	*tsha skran*
tsha btul, se' bru, da li, tsi tra ka, tsha ba gsum, tsha gsum	*grang skran*
rgod btul, se'bru bzhi, thal ba gsum	*grang, chu ser*
grang btul, rin chen gsum, thal gsum	*chu ser*
[bdud rtsi btul], 'bras bug sum, tsha ba lnga, sbrang [*rtsi*], *lcags* [*lcags phye*]	*rkya rbab*
tshil rgyal, rta rmig, thod le, 'gron bu, 'bras bug sum, tsha sna rigs, bi sha, tsha ba lnga, rdo zho, chang	*rkya rbab, dmu 'or, gcong nad, srin bu, drod bskyed, lcags dreg, rlung grang gzhi gi nad*
tshil bu, gi wang, tsan lda, bo nga dkar, tig ta, gser me, ba sha ka	*grang glang*
tshil bu, tsha bag sum, tshwa lnga, se'bru	*grang glang*
tshil rgyal po, gla rtsi, sgo skya, byi tang ka, dwe ba [*dwa ba*], *thang phrom, ma ru tse*	*srin glang*
rgod btul, btsan dug, gla ba, rus pa brgyad [*ru rta brgyad 'gyur*],[193] *dmar leb* [*srin bu dmar leb*], *phur thal*	*srin sel*
tshil bu, dmar leb, byi tang ka, 'brum	*srin sel*
tshil bu, spru nag, stag sha, btsan dug, gul [*gu gul*], *gla* [*gla ba*]	*gnyan nad*
tshil bu, dwa tshwa, ra tshwa, ba sha ka, ka ra	*bad kan brlang gyis skad 'dzer lud pa skam po*
tshil bu, ru rta, tig ta, ba sha ka, gser me	*khrag rlang* [*mkhris rlang*] *gyis dmar khro skrangs nad mid pa dog*
tshil chen, mar, shin kun, ra mar	*rlung gis* [*mid pa*] *gag pa*

[192] Animate poisons (Byams pa' phrin las 2006, 253).
[193] *'Chi med bdud rtsi bum pa* (1) [121v6].

Table 5. Saxifrage Theriacs

Recipes	**Therapeutic and apotropaic uses**	**Associated external therapies**
sman gyi lha mo,[194] *spang rtsi, hong len, phug ron rkang, tig ta, kyi lce, sum cu tig, par pa ta, sro lo* (*grang thang*; administered as a cold decoction)	*mkhris rims, ksha ya ser nag*	*skyugs, bshal*
lha mo, dug nyung, pa to la, dom khris (*thang phye*; administered as a decoction or powder)	*mkhris rims, ksha ya ser nag*	*rngul dbyungs*
phye ma, gsil gsum, bo nga dkar, ba le ka, ba sha ka, ka ra (administered with snow water or the previous decoction)		*gtar*
lha mo, sle tre, dung nyung, ti ta, gser me, kyi cle ba, bong dkar sdus pa'i khu ba (*thang*; administered as a decoction)	*mkhris tshad*	*gtar*
lha mo, li ga dur, par pa ta, ru rta	*mkhris rims*	
lha mo, ba sha ka, ba le ka, sle tres, skyu ru ra (*thang*; administered as a decoction)	*stod du mkhris pa lud pa*	*gsha' rings* [*ring gsum*] (*bad kan gsha' ring*; *mchin rtsa'i gsha ring*; *mkhris pa'i gsha' ring*)[195]
lha mo, Ut pal sngon, ti ta, gser me, brag zhun, mkhris sna rigs, tshad, ka ra (*phye ma*; powder, here administered with melted snow water)	*stod du mkhris pa lud pa*	
lha mo, pa to la, brag zhun, nim ba, a ru, tig ta, rgun 'brum, lcung rtsa, skyed [*skyer*], *ri sho, shing mngar, ka ra, gser me, ba chu, sbang ba'i khu ba, stod 'dren bdud rtsi (bshal kyi sngon 'gro;* preliminary emetic therapy)	*mkhris pa pho bar 'dus, tsha mkhris bcos*	
lha mo, dur byid, dan da, dong kha, lcum rtsa, chu	*mkhris pa pho bar 'dus, tsha mkhris bcos*	

[194] *Lha mo* is an encoded name for saxifrage.
[195] Bloodletting points at the forearms (Byams pa 'phrin las 2006, 291).

ma rtsi, 'gron bu, tsha la, gser me, stod 'dren (bshal gyi dngos gzhi; emetic therapy- main procedure)		
lha mo, phar ril bsreg thal se 'bru, skyu ru ra, star bu, nim ba, shing tsha, gser me	*grang mkhris*	
lha mo, gser phud, ri sho, rgya tsha, dur byid, pi pi ling,	*grang mkhris*	
rgya tsha bzhi thang, lha mo gsar phud (used as emetic)	*'jud byed nad*	
lha mo, dur byid, lcum rtsa, bse 'bru brgyad[196]	*mdangs sgyud nad*	
lha mo,gur gum bdun,[197] *mkhris pa sna, phye ma ka ra, gangs chu, 'bras bu gsum zho sha'i*[198] *sman mar dzā ti kha blang* (decoction and medicinal butter)	*sgrub byed nad, dran pa mi gsal, shes pa rmongs*	
lha mo, sbrul sha [*lcags sbrul sha*],[199] *tig ta, ba dmar zel mo'i 'o ma* (*sman mar, lde gu*; medicinal butter or electuary)	*mthong gsal nad*	*gsang dpral rtsa gser mdung gtar*[200]
lha mo, tsan ldan, gser me, se 'bru, so ma radza (*thang phye*; administered as a decoction or medicinal powder)	*mthong gsal nad*	

[196] Pomegranate 8 formula.
[197] Saffron 8 formula.
[198] *Snying zho sha, mkhal zho sha, gla gor zho sha*. Byams pa 'phrin las 2006, 756.
[199] *'Chi med bdud rtsi bum pa* (1) [55r2].
[200] Bloodletting at the bleeding vein located at the hairline, four fingers above the spot between the eyebrows (*mtshogs gsang dpral rtsa*), and the point located between the right-side space between the eyebrows and the hairline (*gser mdung*). See Byams pa 'phrin las 2006, 733, 973.

Table 6. Complete list of ingredients of all formulas[201]

Materia medica	**Proposed identifications[202]**
ka ka ru (*sdig srin*)	*Potamon* spp.[203] (crab; Yunnan crab)
ka ra'i phye ma	granulated refined sugar
kyi lce	*Gentiana robusta (Gentiana tibetica Maxim*; *Gentiana straminea)*
klu bdud rdo rje	*Codonopsis* spp.
skyu ru ra	*Phyllanthus emblica*
skyer pa	*Berberis* spp. (Himalayan barberry)
skyer shun	*Berberis jamesiana*
kha tshar (*sman*)	minor ingredients
khyung sder	Garuḍa-claw medicinal root,[204]
mkhris sna tshogs	Diverse kinds of bile (bear bile, peacock bile, pig or boar bile, and fish bile)
gang ga chung	*Gentiana urnula* (urn-shaped gentian)
ga bur	*Cinnamomum camphora* (camphor)
gangs chu	snow water
gangs thig	snow-drop mineral
gu gul	*Commiphora mukul*; *Styrax benzoin* (guggul myrrh or oleogum resin)
gu gul nag po	*Bdellium* (black or false myrrh)
gur gum	*Crocus* spp.; *Carthamus tinctorius* (saffron; safflower)
gri shi	flesh of man who died by stabbing
gla gang	*Bistorta macrophilla*
gla rtsi	musk produced by *Moschus moschiferus*
rgun 'brum	*Vitis vinifera*[205] (grape)
sga skya	*Zingiber officinalis* (ginger)
sgog skya (*sgog pa*)	*Allium sativum*[206] (garlic)
sgog thal	calcined garlic ashes
sgong thog	*Sisymbrium heteromallum*;[207] *Sisymbrium brassiciforme*[208]
'gron bu	*Monetaria moneta*[209] (cowry shell)
rgya snag	Chinese black ink

[201] Tibetan terms in the first column are order according to Tibetan alphabet.

[202] See note 105 for the complete list of medical dictionaries, pharmacopeias, and academic studies consulted. Substances that were identified in the previous parts of the paper are just enumerated here, whereas those that appear in the previous six tables and were not identified before are further discussed in the upcoming notes.

[203] Dga' ba'i rdo rje 1995, 377–78.

[204] For possible identifications, see Dga' ba'i rdo rje 1995, 119–20.

[205] Dga' ba'i rdo rje 1995, 122.

[206] See the superior *rasāyana* practice in Chapter 90 of the *Man ngag rgyud*, third tantra of the *Rgyud bzhi*. (*Rgyud bzhi* [547/ 19–548/4]). See also Sangs rgyas rgya mtsho, *Gso ba rig pa'i bstan bcos sman bla'i dgongs rgyan rgyud bzhi'i gsal byed Bai ḍū rya sngon po*'i *mallika* (Bod ljongs mi dmangs dpe skrun khang ed. 1982, hereafter *Bai ḍū rya sngon po*): *Bai ḍū rya sngon po, smad cha* [1473/11–1474/6]). Gerke 2012 and Gerke 2012 (2013). Wujastyk 2011, 225–38.

[207] Dga' ba'i rdo rje 1995, 195.

[208] Ghimire et al 2021, 166.

[209] Dga' ba'i rdo rje 1995, 377.

rgya tsha	sal ammoniac [NH4Cl][210]
rgyam tshwa	rock salt[211]
mngar gsum	"the three sweet substances" (*ka ra, bu ram, sbrang rtsi*)
sngo sprin (*lcags kyu*)	*Thalictrum foetidum*[212] (fetid meadow-rue)
cu gang (*smug cu gang; smug bcud*)	*Bambusa* spp. (nodal silica of bamboo)
co ga klad sman ('bu su hang)	*Medicago lupina L.; M. falcata; M. archiducis-nicolai*[213]
cong zhi	limestone ($CaCO_3$)
lcags phye	iron calcined ashes
lcam dkar	*Malva verticillata; Malva sinensis* (Chinese mallow)
lca ba	*Angelica sinensis*
lcag	iron (Fe)
lcags sbrul	*Bungarus multicinctus* [214] ("iron snake," Chinese krait)
lcum rtsa	*Rheum officinale*; *Rheum palmatum* (rhubarb)
lcong 'gyur sha	tadpole meat
chig thub	"panacea" (either Goethite or diverse plants classified under this name of *dkar po chig thub*)
chu ma rtsi	*Oxyria digyna* Hill. (Alpine mountain-sorrel)
mchil pa	*Passer montanus* (Eurasian sparrow)
mchu snyung	"small beak myrobalan"
'jib rtsi	*Dracocephalum or Salvia* spp.[215]
nyi dga' (*bod lcam)*	*Malva verticillata* (Chinese mallow)
snyag (*rtsad*)	*Hymenidium hookeri*; *Plerospermum hookeri*[216]
snying zho sha	*Choerospondias axillaris* (Roxb.) (ambarella)
tig ta (*rgya tig; bod tig; bal tig)*	*Swertia chirayita* (Roxb.) (brown chiretta); *Swertia racemosa*; *Swertia ciliata*.
tig tsha dmar po	*Zincitum* [ZnO][217]
tig tsha ser po	Sphalerite [(Zn, fe)S][218]
til nag	*Sesamum indicum* (black sesamum)
btul ma	"subjugated" (processed substances; it refers to the procedures to obtain mineral and metallic calcined ashes)
rta dkar chu	white horse urine
rta khrag	domestic horse blood
rta rmig	*Viola* spp.
rta lpags	*Phlomoides rotate* (rosette sage)
star bu	*Hippophae rhamnoides* (sea buckthorn)
tha ram	*Plantago depressa* [219]

[210] Ghimire et al. 2021, 363.
[211] According to the sources, this is identifiable as *Sallucidum* (Dga' ba'i rdo rje 1995, 87; Ghimire et al. 2021, 363).
[212] Ghimire et al. 2021, 250.
[213] Ghimire et al. 2021, 185.
[214] Dga' ba'i rdo rje 1995, 382–83.
[215] Ghimire et al. 2021, 206.
[216] Ghimire et al. 2021, 131–32.
[217] Dga' ba'i rdo rje 1995, 45–46.
[218] Ibid.
[219] Dga' ba'i rdo rje 1995, 213; Ghimire et al.2021, 230.

thang phrom	*Anisodus* spp.; *Mandragora caulescens* [220] (nightshade; mandrake)
thal ka rdo rje	*Cassia tora* (fetid cassia)
thal ba gsum	"the three ashes"[221]
thar nu	*Euphorbia wallichii* (spurge)
thug 'bras	formula prepared with animal testicles to cure virility and renal diseases
thod le [*thod le kor*] (*ha shig*)	*Talcum* [$Mg_3Si_4O_{10}(OH)_2$] [222]
da byid	*Batrachuporus pinchonii*[223]
da lis	*Rhododendron* spp.[224]
dan da (*daṇḍa khra; dan rog*)	*Ricinus communis* (castor oil plant)
dug mo nyung ba	*Holarrehena pubescens* (feverpod in the family of *Apocynaceae*)
dud pa [dud dreg]	soot
dur byid	*Euphorbia pseudosikkimensi*[225] (Himalayan euphorbia)
dong ga	*Cassia fistula* (purging cassia)
dom mkhris	Tibetan bear bile
dwa ba	*Arisaema flavum* (cobra lily)
dwa tshwa (*shing tsha)*	cinnamon; Indian bay leaf
dri chu	Urine
dre'u khrag	mule blood
sdig srin	*Potamon* sp. (Yunnan crab)
rdo zho	lime
na ram	*Triglochin maritimum* (arrowgrass)

[220] Boesi 2005–2006, 82.

[221] According to *'Chi med bdud rtsi bum pa* (1) [129v5], it refers to the three kinds of calcinated bones (*rus thal gsum*). On their identification, see Byams pa 'phrin las 2006, 854).

[222] Dga' ba'i rdo rje 1995, 83.

[223] *Da byid*. Also called *gangs sbal* or "snow frog" (Dga' ba'i rdo rje 1995, 376–77). In Sangs rgyas rgya mtsho's *Bai ḍū rya sngon po*, conforming to a common mistake, it is called the "*Karkaṭa* (crab) coming from the Snow Mountains" (*gangs las byung ba'i kar ka ṭa*). However, this is described as a dark mottled salamander (*da byid smug po*) with a short neck and tail. He also offers a detailed description of male and female specimens, which are respectively distinguished by golden and turquoise-colored ridges; they can also be recognized by the presence of upward wrinkles on the tails, which are typical of male specimens, while the females have downward wrinkles on the tails. They are very similar to frogs and are usually called "sylvan frog" (*nags sbal*) or "yellow salamander" (*da byid ser po*) (*Bai ḍū rya sngon po* [1487/1–10]).

[224] Dga' ba'i rdo rje 1995, 133–34.

[225] Different species in the *Euphorbiaceae* family, such as *Ricinus communis* and its variants, are used to cure skin lesions caused by leprosy and other communicable diseases, and cold and hot diseases. According to Dga' ba'i rdo rje (1995, 220–21), this plant corresponds to *Euphorbia fischeriana*, whose roots are used in Chinese medicine to cure cancer, edemas, and tuberculosis. See Yong Xu Sun and Ji Cheng Liu 2011, 1205–14. According to De'u dmar bstan 'dzin phun tshogs in his *Shel gong shel phreng* (1986, 285–6), this medical substance can be differently identified—plants such as "wild castor or wild croton," i.e., *Baliospermum* (Skt. *dantī*) and *Glycyrrhiza glabra* (Skt. *madhuka*).

na le sham (*pho ba ris*)	*Piper nigrum* (black pepper)
nim ba	*Azadirachta indica* (neem; Nimba or Indian lilac; *Sophora subprostrate*)
nu 'thung khyi'u'i chu	urine from a breastfed child
pa to la	*Bletilla striata*; *Bletilla ochracea* [226] (ground orchid)
par pa ta	*Hypecoum leptocarpum* (hypecoum poppy)
pi pi ling	*Piper longum* (long pepper)
pri yang [ku]	*Dracocefalum tanguticum*[227]
spang rgyan dkar	*Gentiana stipitata* (white gentian)
spang rtsi do bo	*Pterocephalus hookeri* (honeysuckle)
spos dkar	*Shorea robusta* (resin of sal tree)
spru nag	*Notopterygium forbesii*[228] (black hogweed)
spru rtsa	*Heracleum candidans* (white hogweed)
spyi zhur (*stab seng*)	*Fraxinus* spp.
phag ril bsreg thal	calcined pig dung
phug ron rkang (*re skon*)	"pigeon leg *Corydalis*"
phur mong thal	ashes of *Artemisia vestita*
pho ba ris	*Piper nigrum* (black pepper)
phya tshan gsum	infant, foal, and puppy's feces
ba dmar gyi 'o ma	cow milk
ba spru dkar	*Mirabilis himalaica*[229]
ba le ka	*Aristolochia griffithii* (birthwort)
ba sha ka (Skt. *Vāsaka*)	*Adhatoda vasica* (Malabar nut); *Corydalis* spp.[230]
bi sha (*btsan dug*)	black aconite
big pan	*Chalcanthum* [$CuSO_4 \cdot 5(H_2O)$] [231] (chalcanthite; copper sulfate)
bong nga dkar	*Aconitum heterophyllum* (white aconite)
bo nga rnam	*Aconitum* spp.[232]
bu chung gi bdud rtsi	child's nectar (urine)
bu med skyes pa'i khyi'u nu ma zho	yogurt from maternal milk
bu ram	molasses
bul tog	Soda
bur dkar	rock sugar
brag zhun	bitumen (mineral exudate)

[226] Dga' ba'i rdo rje 1995, 227–28.
[227] Dga' ba'i rdo rje 1995, 234.
[228] Three different perennial plants are subsumed under the name *spru ma*: *Heracleum candidans* (*spru dkar*), *Notopterygium forbesii* (*spru nag*), and *Notopterygium incisum* (*spru ser*) (see Byams pa 'phrin las 2006, 476–77; Dga' ba'i rdo rje 1995, 240).
[229] Kletter and Kriechbaum 2001, 28–31.
[230] Kletter and Kriechbaum 2001, 26–28.
[231] Dga' ba'i rdo rje 1995, 90.
[232] The text does not provide us with a precise reference. Four categories of aconite are enumerated in Tibetan sources: white aconite (*bong nga dkar po*) identifiable as *Aconitum heterophyllum or Aconitum tanguticum*; black aconite (*bong nga nag po*) or *Aconitum richardsoniam*, identified also with *ra dug* or *Aconitum polyanthum*; yellow aconite (*bong nga ser po*) or *Aconitum Kongboense*; and red aconite (*bong nga dmar po*) or *Pedicularis trichoglossa*. See Dga' ba'i rdo rje 1995, 243–46; about *bong dkar*, see Kletter and Kriechbaum 2001, 32–37.

bya rgod spos	*Delphinium brunonianum*[233] (musk larkspur)
bya thal	bird dung
bya rog nor bu (*spa yag ba)*	*Lancea tibetica*[234]
byang sems gnyis	"two bodhicittas" (male and female sexual fluids)
byi tang ka	*Embelia laetel* (Skt. *Viḍaṅga*); *Embelia ribes; Embelia tsjeriam-cottam* (false black pepper)
byi'u la phug	*Arabidopsis*;[235] *Crucihimalaya himalaica; Torularia humilis*
dbang lag	*Gymnadenia orchidis* (marsh orchid)
sbal rgya	hematite ore
'bras bu'i rlig pa rigs	varied animal testicles
'bras bu gsum	"three fruits" (*a ru ra, skyu ru ra, ba ru ra.*)
'bri mog	*Arnebia benthamii* (Himalayan arnebia)
'brum	unspecified berries
dbyi mong	*Clematis* spp.[236] *(*Himalayan mountain clematis)
sbyar spos	mixed incenses
ma nu	*Inula racemosa* (Indian elecampane)
ma ru tshe	*Butea monosperma*[237] (false teak)
mar	Butter
mar khu	clarified butter
mi rgyus	human sinews
mi rus	human bones
mu tig	Pearl
mu zi	*Sulphur nativum* [S] (sulfur)
me tog gsum	"three flowers" (*lce kyi lce dkar po, spang rtsi do po, spang rgyan dkar po;* it can also refer to *lce tsha me tog*)
rmigs pa (*rmigs bu*)	*Eremias argus* (runner lizard*)*
sman mchog (*a ru rag ser mdog*)	*Terminalia chebula* (golden myrobalan)
tsan ldan dkar	*Santalum album* (white sandalwood)
tsan ldan gnyis	white and red sandalwood (*tsan ldan dkar po,* Skt. *Candana*; *tsan ldan dmar po* Skt. *Raktacandana*)
tsan ldan dmar	*Pterocarpus santalinus* (red sandalwood)
tsi tra ka	*Capsicum frutescens*
btsan dug	black aconite
btsod	*Rubia cordifolia* (madder)
rtsa mkrhis	*Ixeris gracilis*[238]
rtsa ba lnga	"five roots" (*ra mnye, nye shing, lca ba, ba spru, gze ma*)
rtsangs pa	*Paralaudakia himalayana* (Himalayan rock agama)
rtsi chen (*shin kun*)	*Ferula asafoetida*
tsha ba gsum	"three hot substances" (*sga skya, sga smug, pho ba ris, pi pi ling)*
tsha la	borax
tshwa gsum	three salts (*kha ru tshwa, tsabs ru tshwa, rgyam tshwa;* alternatively identified with *ze tshwa, bul tog, byang tshwa*)

[233] Ghimire et al. 2021, 246.
[234] Ghimire et al. 2021, 212.
[235] Kletter and Kriechbaum 2001, 65–67.
[236] Ghimire et al. 2021, 246.
[237] Ghimire et al. 2021, 182.
[238] Ghimire et al. 2021, 250.

tshos	dye (either *btshod* or *rgya skyegs*)
mtshal	cinnabar
dzā ti	*Myristica fragrans* (nutmeg)
mdze tsha	type of salt
zhu mkhan (*nags zhun*; *spang zhun*)	*Symplocos paniculata* (Skt. *lodhra*, sapphire-berry)
zhun mar	clarified butter
zangs	copper
zab lag can (*chu rtsa*; *chu rtsa sman pa*)	*Rheum australe*; *Rheum spiciforme*
zal mo'i 'o ma	spotted 'bri milk
zi ra dkar po	*Cuminum cyminum* (cumin)
ze tsha	saltpeter
zer mo	small yellow bird
zla zil bdud rtsi	purified mercury
gza' dug	*Bhrahmakamal* or *Saussurea obvallata*[239] (*Asteraceae* family)
gze ma	*Tribulus terrestris* (thorny caltrop)
bzang drug	"six good substances" (*cu gang, gur gum, li shi, dzā ti, sug smel, ka ko la*)
'o ma	Milk
'om bu	*Myricaria* spp. (tamarisk)
yung dkar	*Sinapis alba* (white mustard)
yung nag	*Sinapis nigra* (black mustard)
yu mo mde'u 'byin	*Paraquilegia microphylla* (Himalayan columbine)
g.yer shing	*Scrophularia* spp.[240]
ra gan	*Orichalcum* [CuZn] (brass)
ra mo shag (ra mnye)	*Polygonatum cirrhifolium* (Solomon's seal)
ra 'o ma	goat milk
rak ta (Skt. *raktā*)	"red substances" [241]
ri sho	*Ligularia virgaurea* (groundel)
ru rta	*Saussurea costus* [242] (costus)
re skon	*Corydalis megacalyx; Corydalis hendersonii*

[239] Ghimire et al 2021, 155.

[240] Dga' ba'i rdo rje 1995, 284; Ghimire et al 2021, 266.

[241] It can be identified with human, mineral, and herbal products, such as blood (in a tantric context, it mainly refers to female menstrual blood), shellac or the lac insect host tree (*rgya skyegs*, *Laccifer lacca*), and Indian madder (Skt. *mañjiṣṭhā*, Tib. *btshod*, *Rubia cordifolia*). It may refer also to safflower (*kuṃkuma*, *kusumbha*, which is the Sanskrit word for *Carthamus tinctorius*), a plant from the Asteraceae family, red sandalwood, or *Pterocarpus santalinus* (Skt. *raktacandana*, Tib. *btsan ldan dmar po*). It could be identified as Indian licorice (*raktaguñjā* or simply *guñjā*), which is a medicinal plant associated with *Abrus precatorius*; it could also refer to *Pedicularis trichoglossa Hook* (*bong nga dmar po*), which is classified in Tibetan pharmacopeia as the red variant of aconite (*bong nga*). It may refer to *mākṣika* (pyrite, chalcopyrite), copper, and even mercury, whose alternative name is given in several Tibetan medical dictionaries as *raktaṃ* (this secondary derivative form can be translated literally as "the one related to *the red one*"), which may refer to vermillion or cinnabar, both used to obtain mercurial medicines. Byams pa 'phrin las 2006, 834.

[242] Skt. *kuṣṭha.* This plant has two variants: the white costus called *Vladimiri souliei* of Khams (*khams kyi ru rta*) and the black *Saussurea lappa* or *Aucklandia* (*sha po ru rta*) of Indian origin (Dga' ba'i rdo rje 1995, 290–91). See also Czaja 2017, 195–95.

re lcag	*Stellera chamaejasme* (Himalayan stellera)
re ral [*ldum bu re ral*] (*rgyal po re ral; blon po re ral; btsum mo re ral*)	*Drynaria sinica* (fern)
rwa tshwa	medical preparation containing animal horns and crystal-like salt (*byang tshwa*)
la phug	*Raphanus sativus* (radish)
li ga dur (*ga dur sman pa*)	*Geranium* spp.[243] (crane's bill geranium)
li shi	*Eugenia aromatica* (cloves)
lug mchin	sheep liver
lug mur	*Phlomis* spp. (Jerusalem sage); *Phlomis kameguchii*; *Codonopsis convolvulacea*
lug ru ser po	*Pedicularis longiflora*
lo brgyad chu	urine of an eight-year-old child
sle tres	*Tinospora sinensis* (Chinese moonseed)
lha mo	*Chrysosplenium carnosum* (saxifrage)
sha rgyal	*Oxytropis* spp. (locoweed)
shing kun	*Ferula assafoetida* (asafoetida)
shing mngar	*Glycyrrhiza glabra; Glycyrrhiza glangulifera; Glycyrrhiza uralensis* (licorice)
shing tsha	*Cinnamomum cassia; Laurus tamala* (cinnamon, Indian bay leaf)
shu dag	*Acorus calamus* (sweet flag)
shug pa tsher can	thorny juniper
shug 'bras	juniper berries
sug smel	*Elettaria cardamomum; Amonum compactum* (green cardamom)
sum cu tig. (*tig ta*)	*Swertia* spp.
se rgod	*Rosa sertata; R. brunonii* (wild rose or musk rose)
se 'bru	*Punica granatum* (pomegranate)
seng khrom [*phrom*]	*Symplocos paniculata*
ser mtshur	Fibroferitum [Fe(OH)SO4•5H2O][244] (yellow fibroferrite)
so ma ra dza	*Cannabis sativa; Abelmoschus moschatus*
sran ma	*Pisum sativum*
srin bud mar leb (*ma ru tse*)	*Butea monosperma*
sro lo	*Rhodiola* spp. [245] (rhodiola)
gsal byed sman	"the clarifying medicines"[246]

[243] Otherwise called *ga dur mchog* or *na ga ti*. The inferior type is *ga dur dman pa.* It is usually associated with the genera *Bergenia, Geranium, and Rhodiola,* but also with the genera *Rheum, Cyperus*, and *Erodium* (Czaja 2017, 175–77).

[244] Dga' ba'i rdo rje 1995, 89.

[245] Four diverse plants are classified under this general name: 1) *Pegaeophyton (sro lo dkar po*), 2) *Solms-laubachia* (*sro lo smug po*), and two variants of *Rhodiola* (*sro lo dmar po*), namely, 3) *Rodhiola crenulata* and 4) the smaller *Rhodiola dumulosa*; see Dga' ba'i rdo rje 1995, 313–14; Byams pa 'phrin las 2006, 960–61.

[246] Here, *a ba* and *rtag tu ngu* are the only two substances quoted. However, this formula might refer to "the [sight] clarifying electuary" (*gsal byed lde gu*; containing *'bras bug sum,rtsa a ba, lcags phe, go snyod, shing mngar, mar gsar, ka ra, sbrang rtsi*) and the "*a ba* recipe with fifteen ingredients" (*a ba bco lnga*; containing *cong zhi, bsil*

gser thig	*Erysimum* spp. (wallflower)
gser phud [*gser gyi phud pa*]	*Luffa cylindrica* (sponge gourd)
gser phye	calcined gold ashes
gser me [*gser me tog; gser gyi me tog*]	*Herpetospermum pedunculosum* (Himalayan bitter gourd)
bsil gsum	"the three cooling substances" (*cu gang, gur gum, li shi*) Sometimes, the medical dictionaries refer to four substances, in which case *sug smel* is included.
bse ru	rhino horn
bse yab	*Chaenomeles speciosa* (Chinese quince)
hong len	*Picrorhiza scrophulariiflora*[247]
lhang mtsher	mica
a krong	*Arenaria*; *Eremogone*[248] (sandwort)
a ga ru	*Aquilaria* spp. (agarwood)
a ba	as plant (*rtsa a ba*) *Gagea serotina* (Snowdon lily); as mineral: goethite
a byag (*tsher ngon*)	*Meconopsis horridula* (prickly blue poppy)
a ru ra	*Terminalia chebula*
ug chos	*Incarvillea diffusa* (Himalayan gloxinia)
ut pal (*sngon po dar ya kan)*	*Meconopsis grandis (*Himalayan blue poppy*); Meconopsis horridula*

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gsum, a ba gnyis, rtsa a ba, ut pal, brag zhun, sbrul gyi sha, lcag phye, shing mngar, go snyod), both used to cure sight impairments.

247 Dga' ba'i rdo rje (1995, 315) identifies it with *Lagotis yunnanensis*, distributed in northwestern Yunnan and northwestern Sichuan. According to Karma chos 'phel (1993, 255–57) *honglen* plants are (1) *hong len mchog* (*Picrorhiza scrophulariiflora*) and (2) *hong len dman pa* (*Lagotis glauca*). See also Boesi 2007, 78.

248 *A krong*. It is usually identified as *Arenaria kuansuensis*. According to Dga' ba'i rdo rje (1995, 316), it is *Thalictrum aquilegiforum*. Another variety is called *mkhan pa A khrong or "Artesimia A krong"* because its leaves are like those of *Artemisia* (*mkhan*/*'khan*). All these plants are considered beneficial in cases of pulmonary disorders and conditions such as pneumonia, cough, and throat infections (*gre ba'i tshad*). See Karma chos 'phel 1993, 245–47; Byams pa 'phrin las 2006, 86, 708.