# A Translation of the New Edition of the Suśrutasaṃhitā

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## Sūtrasthāna, adhyāya 14: On Blood

### Previous scholarship

Meulenbeld offered both an annotated summary of this chapter as well as a study specifically on the place of blood in Ayurvedic theory.<sup>72</sup>

#### **Translation**

1 Now we shall explain the chapter about blood.

2

3 The most intangible/subtle essence of the food that is of four types,<sup>73</sup> endowed with the six tastes, made of the five elements,<sup>74</sup> having either two or eight potencies, endowed with many qualities,<sup>75</sup> and properly transformed, is called chyle. It is of the nature of the quality of the fire element. It is situated in the heart. From the heart, it enters into the twenty-four arteries—ten upward arteries, ten downward, and four sideways—and doing so day after day owing to the reaction of past activities that is caused by the invisible,<sup>76</sup> it satisfies the entire body, enlivens it, prolongs it,<sup>77</sup> and makes it grow. The speed of the entity that flows throughout the body should be understood by inference. That speed causes deterioration and growth.

The inquiry into the chyle that flows through all the limbs, humours, body tissues, and excretory organs of the body is of the form "Is it gentle or fiery?" On its being mobile due to fluidity, it is understood to

<sup>72</sup> HIML: IA, 209–210 and Meulenbeld 1991. Meulenbeld's footnotes on this chapter in HIML: IB, 325 ff. refer often to "Hoernle's note." This appears to be a reference to Hoernle's copious notes to his translation of this chapter (Hoernle 1897: 87–98). Meulenbeld (1990) discussed Sanskrit veterinary texts in the light of their standard theory of four humours, including blood.

<sup>73</sup> Dalhaṇa says that the four types of food refer to eatable, breakable?, lickable, and drinkable. DW: Cf. 4.3.4(1) (Ca 1941: 308): पानाशनभक्ष्यलेह्य। "drunk, eaten, chewed or licked."

<sup>74</sup> Earth, water, fire, air, space

<sup>75</sup> अनेकगुणोपयुक्त can also be understood as "suitable because of possessing many qualities" or "suitable and possessing many qualities".

<sup>76</sup> अदप्ट (unseen): Doing any righteous or unrighteous action produces good merit and demerit respectively. This good merit and demerit are called अदप्ट (invisible) because they cannot be directly known but can only be assumed through logical deduction.

<sup>77</sup> In the sense of prolonging its lifespan

- be gentle due to attributes such as lubrication, enlivening, satisfaction, holding, etc.<sup>78</sup>
- 4 That watery chyle is then reddened after reaching the liver and spleen.
- 5 Here are verses in this regard.

The untransformed fluid that is reddened by the fire element in its proper state within the body of living beings is known as blood.

- It is only due to chyle that women's blood called menses exists. It increases from the twelfth year and decreases after the fiftieth year.
- 7 The menstrual blood, however, is called fiery<sup>79</sup>.
- 8 That is due to the embryo being fiery and gentle. 80 Others state the embryo as constituted of the five elements and the preceptors call it the living blood.

Here are verses regarding it.

- 9 That is because the qualities of earth, etc. such as a fleshy smell, fluidity, redness, pulsation, and thinness are seen in blood.
- Blood is formed from chyle, flesh from blood, lymph from flesh, bone from lymph, marrow from bone, semen from marrow, and progeny from semen.
- 11 There, the essence (chyle) of food and drink is the nourisher of these body tissues. Here is a verse in this regard.
- A living being should be known as born from chyle. One should diligently preserve<sup>81</sup> chyle by administering food and drink, being nicely disciplined with food<sup>82</sup>.
- 13 The verbal root rasa means movement.83 Because it keeps moving day
- 78 Dalhaṇa interprets "gentle" to mean "similar to phlegm". Monier Williams glosses सौम्य as cool and moist (opp. to आग्नेय, 'hot and dry').
- 79 Dalhana comments that this is to distinguish the menstrual blood from regular blood that is gentle.
- 80 अग्नीषोमीय is a particular Vedic sacrifice which is related to the deities of fire (अग्नि) and moon (सोम). Dalhana comments that the embryo is called such because the menstrual blood is fiery and the semen is gentle (सौम्य). The word सौम्य is derived from the word सोम, where it means that which has the qualities of the moon, i.e. that which is gentle.
- 81 All three manuscripts have रक्षेत which is an incorrect form. रक्षेत् is the correct form.
- 82 आहारेण The third case is used. The semantic property of the third case used here is unclear. Unclear regarding if there is any rule in the Aṣṭādhyāyī justifying this usage.
- 83 kunj-1907

after day, it is called rasa (chyle).84

14 Chyle stays in every body tissue for 2548 ((25\*100)+48) *kalās* and nine *kāṣṭhas*. As such, it becomes semen after a month. For women, it becomes menses.

15ab-cd Here are verses regarding it.

According to similar and dissimilar treatises, the quantity of kalās in this group<sup>85</sup> is 18,090.

15ef-gh This is the particular transformation period regarding chyle that lasts for a person with mild fire<sup>86</sup>. For a person with developed fire, one should know it to last for the exact same time<sup>87</sup>.

- Resembling the expanse of sound, flame, and water, that entity moves along in a minute manner throughout the entire body<sup>88</sup>.
- 17 The aphrodisiac medicines, however, being used like a purgative due to their excessively strong characteristics, evacuate the semen.
- Just as it cannot be said that the fragrance in a flower bud is present in it or not, but accepting that there is the manifestation of existing entities<sup>89</sup>, it,<sup>90</sup> however, is not experienced only due to its intangibility. That same entity is experienced at another time in the blossomed flower. In the same way regarding children also, the manifestation of semen happens because of the advancement of age<sup>91</sup>. For women, the manifestation is

<sup>84</sup> In the list of verbal roots of  $P\bar{a}_n$ ini, the verbal root  $\overline{\mathsf{RR}}(rasa)$  means taste and moistening. It does not mean movement.

<sup>85</sup> duration of chyle in all the body tissues as a whole

<sup>86</sup> Perhaps this refers to the digestive fire.

<sup>87</sup> Although the vulgate does not have this verse, there is an argument presented in Dalhaṇa's commentary (Su 1938: 63) to Ch. 14 text no. 16 that for a person with intense fire, chyle becomes semen after eight days, and for a person with mild fire, chyle becomes semen after a month. Dalhaṇa says that this opinion is refuted by Gayadāsa Ācārya in many different ways. Dalhaṇa then says that the proper understanding is that for a person with a strong fire, chyle becomes blood in a little less than a month, and for a person with a mild fire, chyle becomes blood in a little more than a month

<sup>88</sup> Dalhana comments (Su 1938: 63) that the expanse of sound indicates the sideways movement of chyle, the expanse of flame indicates the upward movement of chyle, and the expanse of water indicates the downward movement of chyle.

<sup>89</sup> This is the doctrine of pre-existence of the effect (सत्कार्यवाद, satkāryavāda) first propounded by Sāṅkhya philosophers.

<sup>90</sup> fragrance

Since chyle becomes semen in a month's time, a question arises "Why then is semen absent in young children?". The reply is given in this passage.

- different as rows of hair, menses, etc.
- 19 That very essence of food does not nourish very old people due to their decaying bodies.
- These entities are called body tissues  $(dh\bar{a}tu-s)$  because they bear the body<sup>92</sup>.
- Their decay and growth are due to blood. Therefore, I will speak about blood. In that regard: The blood that is foamy, tawny, black, rough, thin, quick-moving, and non-coagulating is vitiated by air. The blood that is dark green, yellow, green, brown, sour-smelling, and unpleasant to ants and flies is vitiated by bile. The blood that is orange, unctuous, cool, dense, slimy, flowing, and resembling the colour of flesh-muscles is vitiated by phlegm. The blood having all these characteristics is vitiated by the combination of all three of them. The blood that is extremely black is vitiated by blood<sup>93</sup> just as bile. The blood that has the combined characteristics of vitiations of two humours is vitiated by two humours.
- The blood that is of the colour of insect cochineal, not thick, and not discoloured should be understood to be in its natural state.
- 23 I will speak of the types of blood that should be let out in another section.
- Now, I speak of those that should not be let out. The swelling appearing in all the limbs of the body of a weak person that happens due to consuming sour food. The swellings of people with jaundice, piles, large abdomen, emaciation, and those of pregnant women.
- In that regard, one should quickly insert the surgical instrument that is simple, not very close, fine, uniform, not deep, and not shallow.
- One should not insert the instrument into the heart, lower belly, anus, navel, waist, groins, eyes, forehead, palms, and soles.
- In the case of swellings filled with pus, one should treat them in the same way as stated earlier.
- 27-27a There, when the swelling is not pierced properly, when phlegm and air have not been sweated out, after having a meal, and due to thickness, the blood does not ooze out or oozes out less. Here is a verse regarding

<sup>92</sup> The etymological meaning of the Sanskrit word খানু (dhātu) is "that which bears [the body]". Thus, the body tissues are called dhātu-s because they bear the body. This means that the body tissues are the elements that make up the body and sustain it.

<sup>93</sup> Y. T. Ācārya and N. R. Ācārya (Su 1938: 64) quote Cakrapāṇidatta in a footnote: "This is the symptom when the blood vitiated in one part of the body vitiates the blood in another part."

it.

- 28ab-cd Blood does not ooze out of humans when in contact with air, passing stool or urine, and when intoxicated, unconscious, fatigued, sleeping, or in cold surroundings.
  - 29 That vitiated blood when not taken out increases the disease.
  - The blood that is let by an ignorant physician in cases of very hot surroundings, profuse perspiration, and excessive piercing, flows excessively. That profuse bleeding causes the appearance of acute headache, blindness, and partial blindness, or it quickly causes subsequent wasting, convulsions, tremors, hemiplegia, paralysis in a limb, hiccups, coughing, panting, jaundice, or death.
- 31ab-cd The physician should let out the blood when the weather is not very hot or cold, when the patient is not perspiring or heated up, and after the patient has had a sufficient intake of gruel.
- 32ab-cd After coming out properly, when the blood stops automatically, one should know that blood to be pure and drained properly.
- 33ab-cd The symptoms of the proper drainage of blood are the experience of lightness, alleviation of pain, a complete end of the intensity of the disease, and satisfaction of the mind.
- 34ab-cd Defects of the skin, tumours, swellings, and all diseases caused by blood never arise for those who regularly drain their blood.
  - When the blood does not flow out, the physician should rub cardamom and camphor on the opening of the boil with three or four or all among crêpe ginger (Cheilocostus speciosus), butterfly gardenia (Ervatamia coronaria Stapf), pāṭhā (Stephania Hernandifolia), bhadradāru (Pinus deodora), viḍaṅga (Embelia ribes), citraka (Plumbago zeylanica), the three spices (black pepper, long pepper, and dry ginger), āgāradhūma, turmeric, sprouts of arka (Calotropis gigantea), and fruit of the naktamāla (Pongomia glabra), according to availability, with excessive salt. By doing so, the blood flows out properly.
  - When there is an excessive flow of blood, the physician should sprinkle the opening of the boil with dry powders of *lodhra* (Symplocos Racemosa), liquorice, *priyangu*, *pattānga*, red chalk, *rasāñjana*, seashell, barley, *māṣa*, wheat, and resin of the Sāla tree, and then press it with the tip of a finger. One should tightly bind it with powdered barks of Sāla, *sarja*, *arjuna*, *arimeda* (Sweet acacia), *granthi*, *dhava* (Anogeissus

latifolia), and *dhanvana* (Camelthorn), or a linen cloth<sup>94</sup>, or *vadhyāsita*, or bone of cuttlefish, or powdered lac, along with the binding materials mentioned. After the piercing, the physician should pierce it again. The physician should serve cool clothing, food, a dwelling place, a bath, cooling ointments, and plastering. Or, one can cauterize<sup>95</sup> it with heat. Or, as mentioned, one should give a decoction of  $k\bar{a}kol\bar{\iota}$ , etc. sweetened by sugar and honey to drink. Or, one should consume the blood of black buck, deer, ram, buffalo, rabbit, or pig, accompanied by milk, green gram soup and meat soup<sup>96</sup>. The physician should treat the pains as mentioned.

36a Here are verses in this regard.

When blood flows out due to the decay of body tissue, fire becomes weak<sup>97</sup> and the wind becomes highly agitated because of that endeavour.

38ab-cd The physician should serve the patient food that is not very cold, light in digestion, unctuous, increases blood, slightly sour or not sour at all.

39ab-cd This is the four-fold method of hindering blood: joining, coagulation, haemostasis<sup>98</sup>, and cauterization.

40ab-cd The astringent substance joins the opening, the cold substance coagulates the blood, the ash stops the blood, and cauterization contracts the blood vessel.

If the blood does not coagulate, the physician should employ joining. If the blood does not stop by joining the opening then he should employ haemostasis.

The physician should endeavour by employing these three methods according to the procedure. If these methods are unsuccessful then cauterization is highly desirable.

43ab-cd If the blood remains impure, the disease does not aggravate. The

<sup>94</sup> Su 1938: 66 has क्षौमेण वा ध्मापितेन - "with linen reduced to ashes". Presumably, it is this ash that is also referred to in item 40.

<sup>95</sup> Cauterization: The use of heat to destroy tissues or close minute bleeding vessels.(Reference: https://medical-dictionary.thefreedictionary.com/cauterization)

<sup>96</sup> Based on Dalhana's comment as found in Su 1938: 66

<sup>97</sup> This refers to the digestive fire.

<sup>98</sup> Deliberate arrest of bleeding by local compression or clamping of bleeding vessels...(Reference: https://medical-dictionary.thefreedictionary.com/haemostasis)

physician should then make the blood pure 99 and not drain blood in excess.

44ab-cd Blood is the basis of the body. It is sustained by blood only.

44ef Blood is called life. One should therefore save blood.

45ab-cd If the air in the person who underwent blood-letting is aggravated

due to a cold shower, etc., the swelling with pricking pain should be

sprinkled with lukewarm clarified butter.

<sup>99</sup> Dalhana comments (Su 1938: 66) that one should purify the blood again by sedation, etc.

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Anup Anup Sanskrit Library.

Apte Apte, Vaman Shivaram (1992), The Practical Sanskrit-

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AS Asiatic Society.

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CDIAL Turner, R. L. (1966–85), A Comparative Dictionary of the Indo-Aryan Languages (London, New York, Toronto: Oxford University Press), ISBN: 0197135501, URL; With Indexes compiled by Dorothy Rivers Turner (OUP, London, 1969), Phonetic Analysis by R. L. and D. R. Turner (OUP, London, 1971), and Addenda and Corrigenda edited by J. C. Wright (School of Oriental and African Studies, London, 1985).

DED<sub>2</sub> Burrow, Thomas, and Emeneau, Murray B. (1984), *A Dravidian Etymological Dictionary* (2nd edn., Oxford: Clarendon Press), ark:/13960/t4wj06g26, URL.

EWA Mayrhofer, Manfred (1986–2001), Etymologisches Wörterbuch des Altindoarischen (Heidelberg: Carl Winter, Universitätsverlag), ISBN: 3-533-03826-2.

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HIML Meulenbeld, Gerrit Jan (1999–2002), A History of Indian Medical Literature, 5 vols. (Groningen: E. Forsten), ISBN: 9069801248.

IOLR Eggeling, Julius, et al. (1887–1935), Catalogue of the Sanskrit Manuscripts in the Library of the India Office (London: Secretary of State for India), ark:/13960/s2kbk5zcrg9.

KEWA Mayrhofer, Manfred (1953–72), Kurzgefaßtes etymologisches Wörterbuch des Altindoarischen; a Concise Etymological Sanskrit Dictionary (Heidelberg: Carl Winter, Universitätsverlag).

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MW

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NAK

*National Archives of Kathmandu.* 

**NCC** 

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**NGMCP** 

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PW

Böhtlingk, Otto, and Roth, Rudolph (1855–75), *Sanskrit-Wörterbuch* (St. Petersburg: Kaiserlichen Akademie der Wissenschaften), URL, accessed 18/05/2023.

**PWK** 

Böhtlingk, Otto (1879), *Sanskrit-wörterbuch in kürzerer fassung* (St. Petersburg: Kaiserlichen Akademie der Wissenschaften), URL, accessed 18/05/2023.

RORI

Rajasthan Oriental Research Institute.

Su 1889

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## Glossary and Index of Medical Substances

Numbers after the final colon refer to pages in this book.

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hypochondriacus, L. See King 321,
   NK: 1, #144, Potter<sub>rev</sub>: 15. Cf.
   AVS: 1, 121: 51
axlewood (dhava) Anogeissus latifolia
   (Roxb. ex DC.) Wall. ex Guill & Perr.
   See AVS: 1, 163 f, Chopra: 20: 70
bamboo leaves (venupatrikā) Bambusa
   bambos, Druce. See NK: 1, #307: 51
beautyberry (priyangu) \rightarrow śyāmā.
   Callicarpa macrophylla, Vahl. See
   AVS: 1, 334, NK: 1, #420. Some say also
   Setaria italica Beauv. GVDB: 263–264.
   See also GVDB: 413: 67, 71
beautyberry (śyāmā) Callicarpa
   macrophylla, Vahl. See AVS: 1, 334,
   NK: 1, #420: 49, 51
beggarweed (amśumatī) Desmodium
   gangeticum (L.) DC (Dymock: 1, 428,
   GJM1: 602, NK: 1, #1192; ADPS: 382,
   414 and AVS: 2, 319, 4.366 are
   confusing): 67
beggarweed (vid\bar{a}rigandh\bar{a}) \rightarrow \dot{s}\bar{a}laparn\bar{i}.
   Desmodium gangeticum (L.) DC. See
   Dymock: 1, 428, GJM1: 602, cf. NK: 1,
   #1192; ADPS: 382, 414 and AVS: 2, 319,
   4.366 are confusing: 40
black creeper (pālindī) Ichnocarpus
   frutescens, (L.) R.Br. or Cryptolepis
   buchanani, Roemer & Schultes. See
   AVS: 3, 141, 3.145, 3.203, NK: 1, #1283,
   1210, ADPS: 434: 51, 54, 66, 67
blackboard tree (saptachada) Alstonia
   scholaris R. Br. GVDB: 420: 50
blackbuck (harina) Antilope cervicapra, L.
   See BIA: 270 IW: 95, 165, et passim: 54
blue water-lily (utpala) Nymphaea
   stellata, Willd. See GJM1: 528, IGP 790;
   Dutt: 110, NK: 1, #1726: 25, 49, 66, 67
cardamom (elā) Elettaria cardamomum,
   Maton. See AVS: 2, 360, NK: 1, #924,
   Potter<sub>rev</sub>: 66: 67, 71
cassia cinnamon (patra) Cinnamomum
   tamala, (Buch.-Ham.) Nees. See
   AVS: 2, 84, NK: 1, #589: 51, 67
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amaranth (tandulīyaka) Amaranthus

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castor oil tree (gandharvahasta) \rightarrow eranda.
  GVDB: 135, K&B: 3, 2277: 37
castor-oil (eraṇḍa) Ricinus communis, L.
  See NK: 1, #2145, Chopra: 214: 42
certain minerals (tārāvitāra) Unknown. It
  is not even certain that these are
  minerals. The variant reading in the
  vulgate, tāraḥ sutāraḥ was glossed by
  Dalhana on 5.3.14 (Su 1938: 568) as
  follows tāro rūpyam, sutārah pāradah,
  "tāra means silver; sutāra means
  mercury.": 71
chaff (kāṇḍana) The word kāṇḍana is not
  found in dictionaries; kandana is
  threshing, separating the chaff from the
  grain in a mortar. Cf. Hemādri's
  Caturvargacintāmaṇi (PWK: 2, 8)
   (Siromani 1873: 1, 138: 21, citing the
   Vāyupurāṇa) : 26, 138
chebulic myrobalan (harītakī) Terminalia
  chebula Retz. GVDB: 466: 50
cherry (elavālu) Prunus cerasus, L.?. See
  BVDB 58, NK: 1, #2037, GVDB: 58:67
chital deer (prsata) Axis axis, Erxleben.
  See BIA: 292, IW: 93: 54
cobra's saffron (n\bar{a}gapuṣpa) \rightarrow n\bar{a}gakeśara.
  Mesua ferrea, L. See NK: 1, #1595,
  GVDB: 220:67
corky coral tree (pāribhadra) Erythrina
  suberosa Roxb. See GVDB 245: 70
costus (kuṣṭha) Saussurea costus, Clarke.
  See NK: 1, #2239: 51, 67, 71
country mallow (atibalā) Abutilon
  indicum, (L.) Sweet, but may be other
  kinds of mallow, e.g., Sida rhombifolia,
  L.. See NK: 1, #11, IGP: 1080, NK: 1,
  #2300, ADPS: 71, 77: 40
country sarsaparilla (anantā)
  Hemidesmus indicus, (L.) R. Br. See
  ADPS: 434, AVS: 3, 141-5, NK: 1, #1210.
  But see GVDB: 13 for complications that
  may suggest that it is to be equated
  with sārivā, which may sometimes be
  Cryptolepis or Ichnocarpus fruitescens
  R. Rr. (GVDB: 429-431): 40, 56, 66,
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bhrnga? Eclipta prostrata (L.) L. See
   67,70
crape jasmine (nata) \rightarrow crape jasmine
                                                   GVDB: 288: 56
   GVDB: 215: 134, 135
                                                fermented rice-water (dh\bar{a}ny\bar{a}mla) \rightarrow k\bar{a}\tilde{n}j\bar{\imath},
crape jasmine (tagara) Tabernaemontana
                                                   kāñjikā, sauvīra. GVDB: 458, NK: 2,
   divaricata (L.) R.Br. ex Roem. &
                                                   appendix VI, #18: 39
                                                fern (ajaruhā) Nephrodium species
   Schultes. See GJM1: 557, AVS: 5, 232.
   Synonym of crape jasmine. But some
                                                   GVDB: 7, uncertain. Perhbaps
   say Valeriana jatamansi, Jones See
                                                   Christella dentata(Forssk.) Brownsey
   GVDB: 173–174 for discussion (and
                                                   & Jermy, which is reported to have folk
   charming comments on brain liquid
                                                   applications against skin diseases in
   testing). Some say tagara is Indian
                                                   India: 53
   rose-bay or Indian valerian, but there
                                                fire-flame bush (dhātakī) Woodfordia
   remain many historical questions about
                                                   fruticosa (L.) Kurz. See AVS: 5, 412,
   the ancient and regional identities of
                                                   NK: 1, #2626: 50
   this plant See, e.g., AVS: 5, 334: 51, 67,
                                                fragrant lotus (saugandhika) A type of
   134, 135
                                                   kumuda or utpala (GVDB: 457) : 25
crimson trumpet-flower tree (pāṭalā)
                                                garjan oil tree (aśvakarna) Dipterocarpus
   Stereospermum chelonides, (L. f.) A.
                                                   turbinatus Gaertn. f. See GVDB: 28,
   DC. See GJM1: 573, AVS: 5, 192 ff,
                                                   Chopra: 100: 70
   ADPS: 362 f, AVS: 3, 1848 f, IGP 1120,
                                                giant potato (ks\bar{\imath}ravid\bar{a}r\bar{\imath}) possibly \rightarrow
   Dymock: 3, 20 ff: 70
                                                   kṣīraśukla. Ipmoea mauritiana, Jacq. See
cuscus grass (uśīra) Andropogon
                                                   ADPS: 510, AVS: 3, 222, AVS: 3, 1717 ff:
   murcatus, Retz. Also "vetiver grass."
                                                   136-138
   See NK: 1, #180: 51
                                                ginger (mahausadha) Zingiber officinale,
datura (dhattūra) Datura metel, L. See
                                                   Roscoe. See ADPS: 50, NK: 1, #2658,
   AVS: 2, 305 (cf. Abhidhānamañjarī),
                                                   IGP: 1232: 54
   NK: 1, #796 ff. Potter<sub>rev</sub>: 292 f,
                                                gold (hema) gold: 67
   ADPS: 132: 37
                                                gold and sarsaparilla (surendragopa)
deodar (bhadradāru) Cedrus deodara,
                                                   Unknown. Dalhana on 5.3.15
   (Roxb.ex D.Don) G. Don. See AVS 41,
                                                   (Su 1938: 568) glossed surendra as
   NK: 1, #516:67
                                                   "gold" and gopā as "Indian
dried meat (vallūra) MW: 929,
                                                   sarsaparilla." He also noted other
   AyMahā: 1,730. The term is used,
                                                   opinions that surendra was "Tellicherry
   rarely, in both the CS (1.5.10) and SS
                                                   bark": 71
   (1.13. 16, 6.42.75–76). It is a Dravidian
                                                golden shower tree (rājadruma) rājadruma
   loanword and occurs in the Arthaśāstra
                                                   = āragvadha. Cassia fistula L. See
   etc. (KEWA: 3, 167): 25
                                                   GVDB 37:70
elixir salve (ras\bar{a}\tilde{n}jana) \rightarrow a\tilde{n}jana. See
                                                gourd (alābu) Lagenaria siceraria Standl.
   Indian barberry: 42
                                                   GVDB: 25. Some say Lagenaria
embelia (vidanga) Embelia ribes, Burm. f.
                                                   vulgaris, Seringe (NK: 1, #1419) but
   See ADPS: 507, AVS: 2, 368, NK: 1,
                                                   this is not appropriate for
   #929, Potter<sub>rev</sub>: 113:67
                                                   blood-letting: 21, 22, 50
emetic nut (madana) Randia dumetorum,
                                                heart-leaf sida (balā) Sida cordifolia, Linn.
   Lamk. See NK: 1, #2091: 49
                                                   See ADPS: 71, NK: 1, #2297: 40, 67
                                                heart-leaved moonseed (amrt\bar{a}) \rightarrow gud\bar{u}c\bar{\iota}.
false daisy (subhangurā) (su)bhangura =
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Tinospora cordifolia, (Willd.) Hook.f. & Thoms.?. See ADPS: 38, NK: 1, #2472, 624, Dastur #229: 51, 66 heart-leaved moonseed (somavallī) Tinospora cordifolia (Thunb.) Miers. GVDB: 456. Likely, but uncertain: 51

henna (*madayantikā*) Lawsonia inermis, L. See AVS: 3, 303, NK: 1, #1448, Potter<sub>rev</sub>: 151: 52

Himalayan mayapple (*vakra*)
Podophyllum emodi, Wall.
(NK: #1971). But perhaps a synonm of crape jasmine and crape jasmine
(GVDB: 354): 71

Himalayan monkshood (*ativiṣā*) Aconitum heterophyllum Wall. GVDB: 12, NK: 1, #39. Also "atis roots": 52, 54, 71

hogweed (*punarnavā*) Boerhaavia diffusa, L. See ADPS: 387, AVS: 1, 281, NK: 1, #363: 52, 66

Holostemma creeper (*jīvantī*) → *sūryavallī*? Holostemma ada-kodien, Schultes. See ADPS: 195, AVS: 3, 167, 169, NK: 1, #1242: 137

horned pondweed (śaivāla) also śaivāla, śevāra. Zannichellia palustris L. The uncertainties of this identification are discussed by Singh and Chunekar (GVDB: 409). Sometimes identified with scutch grass (dūrvā) (GVDB: 409). Identified as Ceratophyllum demersum Linn. ("hornwort") by AVS: 2, 56–57x: 136, 138

hornwort (*jalaśūka*) → *jalanīlikā*.

Ceratophyllum demersum, L. See
AVS: 2, 56, IGP: 232. Singh and
Chunekar (GVDB: 166) suggest horned
pondweed. Þalhaṇa noted on 1.16.19
(Su 1938: 79) that some people
interpret it as a poisonous, hairy,
air-breathing, underwater creature: 40
Indian barberry (*añjana*) → *rasāñjana*,

dāruharidrā. Berberis aristata, DC. Dymock: 1, 65, NK: 1, #335, GJM1: 562, IGP: 141: 42, 53, 135

Indian barberry (*dāruharidrā*) Berberis aristata, DC. See Dymock: 1, 65, NK: 1, #685, GJM1: 562, IGP 141: 66, 67

Indian barberry (*kālīyaka*) → *dāruharidrā*, *añjana*. Berberis aristata, DC. See Dymock: 1, 65, NK: 1, #685, GJM1: 562, IGP: 141: 51

Indian ipecac (payasyā) Uncertain.

Possibly Tylophora indica (Burm.f.)

Merr. Perhaps a synonym of panacea
twiner, giant potato, purple roscoea,
and plants like asthma plant and Gulf
sandmat (GVDB: 237–238). Also
"curds" when not a plant: 40, 137

Indian kudzu (*vidārī*) → *payasyā*. Pueraria tuberosa (Willd.) DC. See ADPS: 510, AVS: 1, 792 f, AVS: 4, 391; not Dymock: 1, 424 f. See GJM2: 444, 451, AVS: 1, 187, but AVS: 3, 1719 = Ipmoea mauritiana, Jacq: 40

Indian madder (*mañjiṣṭhā*) Rubia cordifolia, L. See IGP, Chopra: 215, GVDB: 289: 37, 67

Indian mottled eel (*varmimatsya*) Almost certainly the mottled eel. MW: 962c noted that the *varmi* fish "is commonly called *vāmi*." The "vam fish," or "বান মাছ (*bān māch*)" in Bengal, is a marine and freshwater eel, *Anguilla bengalensis*. It is the most common eel in Indian inland waters and a prized food fish (Froese and Pauly 2022). However, some NIA languages identify the "vam" fish with the Indian Pike Conger, *Congresox talabonides* (Bleeker) (Talwar and Kacker 1984: 235, 236): 23

Indian mustard (*sarṣapa*) Brassica juncea, Czern. & Coss. See AVS: 1, 301, NK: 1, #378: 26

Indian sarsaparilla (*sārivā*) → *anantā*. Hemidesmus indicus, (L.) R. Br. ADPS: 434, AVS: 3, 141–5, NK: 1, #1210; and black creeper, pālindī. Ichnocarpus frutescens, (L.) R.Br. or Cryptolepis

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AVS: 3, 141, 3.145, 3.203, NK: 1, #1283,
   1210, ADPS: 434: 66, 67, 135
jambul (jambū) Syzygium cumini, (L.)
   Skeels. See ADPS: 188, NK: 1, #967,
   Potter<sub>rev</sub>: 168, Wujastyk 2003a: 50
jasmine (mālatī) Jasminium grandiflorum,
   L. See NK: 1, #1364: 51
jequirity (guñjā) Abrus precatorius, L. See
   AVS: 1, 10, NK: 1, #6, Potter<sub>rev</sub>: 168: 56
lac (lākṣā) Kerria lacca (Kerr.). See
   GJM1: 445, NK: 2, #32. Watt
   (Watt_{Comm}: 1053–1066) is
   characteristically informative, and is
   definite about the antiquity of lac in
   India: 71
liquorice (?) (klītaka) Glycyrrhiza glabra,
   L.? GVDB: 123–124 discuss the many
   difficulties in identifying this plant: 56
liquorice (madhuka) see yastīmadhuka: 40,
   54, 65, 67
liquorice (yaṣṭīmadhuka) Glycyrrhiza
   glabra, L. AVS: 3, 84, NK: 1, #1136,
   GVDB: 329 f.: 42
lodh tree (lodhra) Symplocos racemosa,
   Roxb. See GJM1: 597, ADPS: 279 f,
   NK: 1, #2420. Singh and Chunekar
   (GVDB: 351–352) notes that there are
   two varieties, S. racemosa, qualified as
   śāvara, and S. crataegoides Buch.-Ham.
   for patțikā lodhra: 67
long pepper (māgadha) Piper longum, L.
   See NK: 1, #1928; but cf. AVS: 3, 245: 53
long pepper (pippalī) Piper longum, L. See
   ADPS: 374, NK: 1, #1928: 54, 67
luffa (kos\bar{\imath}tak\bar{\imath}) = kos\bar{\imath}tak\bar{\imath}. Luffa cylindrica,
   (L.) M. J. Roem. or L. acutangula, (L.)
   Roxb. ADPS: 252–253, NK: 1, #1514 etc.
   GVDB: 121: 50, 66, 137
luffa gourd (kośavat\bar{\iota}) = koṣ\bar{\iota}tak\bar{\iota}, luffa : 66
mango (āmra) Mangifera indica Linn.
   GVDB: 37: 50
marking-nut tree (bhallātaka) Semecarpus
   anacarium, L. See NK: 1, #2269,
   AVS: 5, 98:53
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buchanani, Roemer & Schultes

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medhshingi (vijayā2) Dolichandrone
  falcata (DC.) The Sauśrutanighanţu
  gives a number of synonyms for vijayā
  (Suvedī and Tīvārī 2000: 5.77, 10.143).
  But one of them, visānī (also
  meṣaśrṅgī), is sometimes equated with
  Dolichandrone falcata (DC.) Seemann
  (ADPS: 518; GVDB: 373 f, a plant used
  as an abortifacient and fish poison
   (NK: #862): 56
migraine tree (agnimantha) Premna
  corymbosa, Rottl. See AVS 1927,
  ADPS: 21, NK: 1, #2025, AVS: 4, 348;
  GJM1: 523: = P. integrifolia/serratifolia,
  L:66
milk-white (kṣīraśuklā) An unidentified
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milk-white (*kṣīraśuklā*) An unidentified plant. GVDB: 126: see purple roscoea and giant potato: 40, 138

monitor lizard (*godhā*) Varanus bengalensis, Schneider. See Reptiles: 58: 40, 54

mung beans (*māṣaka*) Phaseolus mungo Linn. GVDB: 308: 51

myrobalan (*abhayā*) Terminalia chebula, Retz. See ADPS: 172, NK: 1, #2451, Potter<sub>rev</sub>: 214: 66, 71

natron (*suvarcikā*) Sodium carbonate. NK: 2, #45. Dalhaṇa identifies *suvarcikā* with svarjikṣāra 4.8.50 (Su 1938: 441): 67

neem tree (*nimba*) Azadirachta indica A. Juss. GVDB: 226: 37

nutgrass (kuruvinda) Unknown. Dalhaṇa on 5.3.15 (Su 1938: 568) glossed the term as nutgrass, but noted other opinions that it was a whetstone or a very special metallic gem. Singh and Chunekar (GVDB: 108) added that it could be a variety of rice, ṣaṣṭika dhānya: 71

nutgrass (*mustā*) Cyperus rotundus, L. See ADPS: 316, AVS: 2, 296, NK: 1, #782: 137

panacea twiner  $(arkapusp\bar{\imath}) \rightarrow arkaparn\bar{\imath}$ , Tylophora indica (Burm. f.) Merr.

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Achyranthes aspera, L. See GJM1: 524 f,
  Indian ipecac, giant potato and similar
  sweet, milky plants. See GVDB: 24, 127,
  238, 441, 443 for discussion. For
  discussion in the context of
  Holostemma creeper, see ADPS: 195
  and AVS: 3, 171. The etymology of the
  name suggests Helianthus annus Linn.,
  but this plant is native to the Americas:
  66, 136
peas (hareņu) hareņu = satīna. Pisum
  sativum, L. Singh and Chunekar
   (GVDB: 419–420, 467–468) notes that
  two plants are usually meant under this
  name, but there is no agreement on the
  identity of the second: 66, 67, 71
peepul tree (aśvattha) Ficus religiosa, L.
  See ADPS: 63: 74
periploca of the woods (mesaśrnga)
  Gymnema sylvestre (Retz.) R. Br. See
  AVS: 3, 107, NK: 1, #1173: 53
plants like asthma plant and Gulf
  sandmat (kṣīriṇī) various milky plants,
  perhaps including Euphorbia hirta
  Linn. (asthma plant) and E.
  microphylla Heyne (Gulf sandmat)
   (GVDB: 127): 136
plumed cockscomb (indīvara) Uncertain;
   possibly Celosia argentea Linn. But see
   the useful discussion in GVDB: 44–45.
  Possibly another name for thorn apple
   (karambha), q.v.: 139
pointed gourd (patola) Trichosanthes
  dioica, Roxb. GVDB: 232-233: 66
poison berry (bṛhatī) Solanum violaceum,
  Ortega. See ADPS: 100, NK: 1, #2329,
  AVS: 5, 151: 66, 67
pondweed (paripelavā) Normally a neuter
  noun. Singh and Chunekar
   (GVDB: 238, 264–265, 409) argued that
  plava and śaivāla are the same thing, and
  may be either Zannichellia palustris, L.,
  or Potamogeton pectinatus, L: 67
pondweed (śevāla) Zannichellia palustris
  L. See horned pondweed: 25
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GVDB: 23–24. Maybe identical to

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AVS: 1, 39, ADPS: 44 f, AVS: 3, 2066 f,
  Dymock: 3, 135: 37, 40
purging nut (mūṣikā) Jatropha curcas, L.
  See AVS: 3, 261, NK: 1, #1374: 53
purple calotropis (arka) Calotropis
  gigantea, (L.) R. Br. See ADPS: 52,
  AVS: 1, 341, NK: 1, #427, Potter<sub>rev</sub>: 57,
  Chopra IDG: 305-308: 40
purple roscoea (ksīrakākolī) GVDB: 89
  notes that many physicians use Roscoea
  procera Wall. in this context. But the
  identification is uncertain. Possibly
  connected to milk-white or giant
  potato: 136, 137
rajmahal hemp (morața) \rightarrow m\bar{u}rv\bar{\iota},
  Marsdenia tenacissima (Roxb.) Wight
  et Arn. Good discussion at
  GVDB: 314-316, 324: 66
red chalk (gairika) gairika: 67
red gourd (bimbī) Coccinia indica, W. &
  A. See PVS 1994.4.715; NK: 1, #534: 50
rice grains (tandula) Oriza sativa, Linn.
  Same as unhusked rice (śāli)
  GVDB: 174; or just "grains": 26
rice-grain chaff (śālitaṇḍulakāṇḍana) See
  chaff: 26
rock salt (saindhava) See NK: 2, M#48,
  Watt_{Comm}: 963–971: 26
rosha grass (dhyāmaka) Cymbopogon
  martinii (Roxb.) Wats. See AVS: 2, 285,
  NK: 1, #177:67
sacred lotus (padma) Nelumbo nucifera,
  Gaertn. See NK: 1, #1698: 25, 51
sage-leaved alangium (ankolla) Alangium
  salvifolium (Linn. f.) Wang.
  GVDB: 5-6: 50
sandalwood (candana) Santalum album,
  L. See ADPS: 111, NK: 1, #2217: 67
sappanwood (pattānga) Also pattanga.
  Caesalpinia sappan, L. AVS: 1, 323,
  K&B: 2,847 f, GVDB: 234:42
scarlet mallow (bandhujīva) Pentapetes
  phoenicea, L. NK: #1836, GVDB: 268: 52
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prickly chaff-flower (apāmārga)

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scented pavonia (bālaka) Pavonia odorata,
                                                same plant as plumed cockscomb
                                                 (indīvara) (GVDB: 76, 44-45): 57, 138
   Willd. See ADPS: 498, NK: 1, #1822: 67
scutch grass (dūrvā) Cynodon dactylon
                                              three heating spices (tryūṣaṇa) śuṇṭhī
   (Linn.) Pers. (GVDB: 205): 136
                                                 (Dried ginger) Zingiber officinale,
selu plum (śelu) Cordia myxa, L. non
                                                 Roscoe. ADPS: 50, NK: 1, #2658,
                                                 AVS: 5, 435, IGP 1232, pippalī (long
   Forssk. See GJM1: 529 (2), IGP: 291b, cf.
                                                 pepper) Piper longum, L.ADPS: 374,
  AVS: 3, 1677 f; cf. AVS: 2, 180 (C.
                                                NK: 1, #1928, and marica (black
   dichotoma, Forst.f.), NK: 1, #672 (C.
                                                 pepper) Piper nigrum, L.ADPS: 294,
  latifolia, Roxb.): 66
sesame oil (taila) Sesamum indicum L.
                                                NK: 1, #1929:66
                                              three-leaved caper (varuna) Crataeva
   GVDB: 183: 41
                                                magna (Lour.) DC. See AVS: 2, 202; cf.
siris (śirīṣa) Albizia lebbeck, Benth. See
                                                NK: 1, #696: 53
   AVS: 1, 81, NK: 1, #91: 66
                                              top layer of fermented liquor (surāmaṇḍa)
siris seeds (śirīsamāsaka) Albizia lebbeck,
                                                 K&B: 2, 502, NK: 2, appendix VI, #49,
   Benth. See AVS: 1, 81, NK: 1, #91: 50
                                                mchu-2021: 39
small-flowered crape myrtle (sidhraka)
                                              tree cotton (kārpāsa) G. arboreum L.
  Lagerstroemia parviflora Roxb. See
                                                 ADPS: 231. Pace the identifications of
   GVDB: 432: 70
                                                Singh and Chunekar (GVDB: 92, 247),
spikenard (māmsī) Nardostachys
                                                since G. barbadense L. is native to
  grandiflora, DC. See NK: 1, #1691:67
                                                South America and G. herbaceum L.
spikenard (nalada) \rightarrow māmsī.
                                                which is native to Africa: 37
  Nardostachys grandiflora, DC. See
                                              tree cotton (picu) See tree cotton
  NK: 1, #1691: 48
                                                 (kārpāsa): 39, 42
sugar (sitā) Dalhaṇa makes this equation
                                              turmeric (haridrā) Curcuma longa Linn.
   at 1.37.25 (Su 1938: 162): 67
sunflower (s\bar{u}ryavall\bar{\iota}) \rightarrow \bar{a}dityavall\bar{\iota},
                                                GVDB: 465: 66, 71
                                              turmeric (rajanī) Curcuma longa, L.
  sūryamukhī, Helianthus annūs Linn.
                                                 ADPS: 169, AVS: 2, 259, NK: 1, #750:
  GVDB: 35, 443: 66
                                                26,67
sweet plants (madhuravarga) The sweet
                                              unhusked rice (śāli) Oriza sativa, Linn.
  plants are enumerated at
  Suśrutasaṃhitā 1.42.11. See also
                                                GVDB: 395–396: 26, 138
                                              velvet-leaf (pāṭhā) Cissampelos pariera, L.
  GVDB: 127: 40
                                                See ADPS: 366, NK: 1, #592, GJM1: 573,
sweet-scented oleander (aśvamāraka)
                                                AVS: 1, 95; cf. AVS: 2, 277: 66
  Nerium oleander, L. See ADPS: 223,
                                              velvet-mite (indragopa) Kerria lacca
  NK: 1, #1709: 56
                                                 (Kerr.). Lienhard 1978: 49
Tellicherry bark (kuṭaja) Holarrhena
                                              verbena (phañjī) Clerodendrum serratum,
  pubescens Wall. ex G.Don, with
                                                L. See AVS: 2, 121, ADPS: 87: 52
   Wrightia tinctoria and W. arborea
  considered GVDB: 101-102,
                                              watered buttermilk (udaśvit) MW: 183: 50
   ADPS: 267-270: 135
                                              weaver's beam tree (muskaka) Schrebera
                                                swietenioides, Roxb. See AVS: 5, 88,
thorn apple (karambha) Datura metel, L.
  See GVDB: 76 for useful discussion.
                                                Lord, NK: 1, #2246: 70
                                              white calotropis (alarka) Calotropis
   Also, AVS: 2, 305 (cf.
   Abhidhānamañjarī), NK: 1, #796 ff.
                                                procera, (Ait.) R. Br. See NK: 1, #428,
  Potter<sub>rev</sub>: 292 f, ADPS: 132. Possibly the
                                                Chopra: 46b, Chopra IDG: 305–308: 40
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- white clitoria ( $\acute{s}vet\bar{a}$ )  $\rightarrow$   $giry\bar{a}hv\bar{a}$ . Clitoria ternatea, L. See AVS: 2, 129, NK: 1, #621: 51
- white cutch tree (*somavalka*) Acacia polyacantha, Willd. See AVS: 1, 30, IGP 7, GJM1: 602, AVS: 2, 935; *pace* NK: 1, #1038: 52, 70
- white siris (*kiṇihī*) Albizia procera, (Roxb.) Benth. See GVDB 98, NK: 1, #93:66
- white water-lily (*kumuda*) Nymphaea alba, Linn. GVDB: 105: 25
- wild asparagus (*bahuputrā*) → *nandana*? Asparagus racemosus, Willd. See ADPS: 441, AVS: 1, 218, NK: 1, #264, IGP: 103, AVS: 4, 2499 ff, Dymock: 3, 482 ff: 52

- wild celery (*agnika*) → may be *bhalātaka*, *lāṅgalī*, *ajamodā*, *moraṭa*, *or agnimantha*, GVDB: 4. Uncertain: 66
- wild celery (*ajamodā*) Apium graveolens, L.: 66
- Withania (*aśvagandhā*) Withania somnifera (L.) Dunal. See AVS: 5, 409 f, Dymock: 2, 566 f., Chevallier 150: 40
- wood apple (*kapittha*) Limonia acidissima, L. See AVS: 3, 327, NK: 1, #1021: 51, 53 woodrose (*mūṣikakarnī*) Jatopha curcas, L.
- AVS: 3, 261, NK: 1, #1374. GVDB: 317; ADPS: 23–25 discuss this issue well: 51
- yellow-berried nightshade (*kṣudrā*) Solanum virginianum, L. See ADPS: 100, NK: 1, #2329, AVS: 5, 164: 66, 67