

A Translation of the Nepalese Text of the *Suśrutasamhitā*

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Sūtrasthāna

Nidānasthāna

Śārīrasthāna

Cikitsāsthāna

Kalpasthāna

Kalpasthāna 4: Snakes and Invenomation

Introduction

The fourth chapter of the Kalpasthāna of the *Suśrutasaṃhitā* addresses the topic of snake bites and snake venom. Unusually for the Nepalese version of the *Suśrutasaṃhitā*, the discussion is framed as a question from Suśruta to the wise Dhanvantari. Suśruta's questions are about the number of snakes, how they are classified, the symptoms of their bites and the pulses or stages of toxic shock experienced by a victim of snakebite and related topics. The taxonomy of snakes is presented in tabular form in Figures 1 and 2.⁴⁰⁹

Literature

A brief survey of this chapter's contents and a detailed assessment of the existing research on it to 2002 was provided by Meulenbeld.⁴¹⁰ There also exists an substantial herpetological literature from colonial India as well as more recent studies of snakes in the context of cultural and religious life.

The ophiological literature of the colonial period began in the late nineteenth century with the work of Fayrer, whose publication included striking colour paintings of snakes.⁴¹¹ Fayrer provided a biological taxonomy

409 On the idea of notational variants in scientific translation, see Elshakry 2008; Sarukkai 2016; Wujastyk 2021: 81–83.

410 HIML: IA, 292–294. In addition to the translations mentioned by Meulenbeld (HIML: IB, 314–315), a translation of this chapter was included in Sharma 1999–2001: 3, 35–45. The classic work of Jolly (1951: ¶93) offered a short but accurate overview of Indian toxicology.

411 Fayrer 1874, first published in 1872.

of snakes as well as chapters on mortality statistics during the nineteenth century, treatment and effects of poison, and experimental data. Ewart (1878) included descriptions of appearance and behaviour of poisonous snakes and sometimes their local names and reproducing Fayrer's illustrations.⁴¹² Wall (1913: 75–124) provided a useful analysis of the medical effects of snake envenomation in India arranged by the varied symptomology of different snakes. He also discussed the difference between the symptoms of toxicity and fright (69–75) and also the difficulties arising out of uncertainty about the effects of snake-bite (124–126). The *Suśrutasamhitā* too recognized the emotional and somatic effects of fright (see note 428 below). Wall (1921) provided a wealth of detail of the snakes of Sri Lanka, including line drawings.

Doniger (2015) provided a good survey of snakes as protagonists in religious literature from the *Atharvaveda* through the epics, *Purāṇas* and Buddhist literature. Semeka-Pankratov (1979) traced semiotics of the term *nāga* through Vedic, Pali and Sanskrit literature. Slouber (2016: 31–33 *et passim*) discussed the *Suśrutasamhitā*'s *Kalpasthāna* as a precursor and influence on later Tantric traditions of snake-bite interpretation and therapy. In particular, the Tantric *Kriyākālaguṇottara* text that Slouber presented divided snakes into two basic categories, divine and mundane, as the *Suśrutasamhitā* does.⁴¹³ But unlike the *Suśrutasamhitā*, in the *Kriyākālaguṇottara* the chief taxonomic principle for both groups is the four *varṇas*.

A discussion of this chapter specifically in the light of the Nepalese manuscripts was published by Harimoto.⁴¹⁴ After a close comparative reading of lists of poisonous snakes, Harimoto concluded that, “the Nepalese version is internally consistent while the [vulgate] editions are not.” Harimoto showed how the vulgate editions had been adjusted textually to smooth over inconsistencies, and gave insights into these editorial processes.⁴¹⁵

412 Calling his work a supplement to Fayrer (1874), but also being cited by Fayrer, Ewart 1878 evidently also collected local indigenous knowledge from his “snake-man” (p. 22).

413 Slouber 2016: 144–145.

414 Harimoto 2011: 101–104.

415 The two editions that Harimoto noted, Su 1938 and Su 1889, present identical texts.

The Seven Stages of Toxic Shock

A prominent feature the *Suśrutasamhitā*'s interpretation of envenomation symptoms is the concept of seven successive stages or pulses (*vega*) of toxic shock after a bite. This is interestingly coordinated with the *Suśrutasamhitā*'s concept of the *kalās*, which are either seven layers of skin that come into existence during embryonic development or seven interstitial tissues that separate the various parts of the body.⁴¹⁶

Contemporary clinical studies of snake envenomation and treatment do not show any awareness of such a seven-stage symptomology of traditional Indian medicine.⁴¹⁷ Exceptionally, the studies by Barceloux and Özbulat et al., do identify and tabulate three stages of envenomation.⁴¹⁸ The symptoms of these three stages are mainly characterized by increasing degrees of edema. This differs from the *Suśrutasamhitā*'s detailed characterization of changes in skin colour etc.⁴¹⁹

Translation

- 1 Now we shall explain the procedure (*kalpa*) about what should be known concerning the venom in those who have been bitten by snakes.⁴²⁰
- 3 Suśruta, grasping his feet, questions the wise Dhanvantari, the expert in all the sciences.

⁴¹⁶ The system of the कला is described at 4.4.4–20 (Su 1938: 355–357). Cf. *Mahākośa*: 1, 183–184, *Śabdasiṃdhū*: 227–228, Kutumbiah 1962: 6, *HIML*: 1, 247–248 and notes. This system of dermal and interstitial कला was not known to the *Carakasamhitā* as such; rather, the *Carakasamhitā* mentioned six kinds of skin (त्वक्) (4.7.4 (Ca 1941: 337)), with different names and characteristics, a contradiction discussed by the commentator Cakrapāṇidatta (*idem*). It appears in later works such as the fourteenth-century *Śārṅgadharasamhitā* (1.1.60 (Śāstrī 1931: 15)).

⁴¹⁷ E.g., Ellenhorn 1997; Weinstein et al. 2009; Pillay 2013: 1747–1749; WHO 2019: 19; Mehta and Sashindran 2002; Hamza et al. 2021; Deshpande et al. 2022.

⁴¹⁸ Barceloux 2008: 1017, Table 176.3, and Özbulat et al. 2021: 7, and Table 1, broadly following Barceloux.

⁴¹⁹ I am grateful to Prof. Jan Gerris (U. Ghent) and Prof. Jan Tytgat (KU Leuven) for assistance in finding relevant toxicological literature.

⁴²⁰ The *Sarvāṅgasundarī*, commenting on *Aṣṭāṅgahṛdayasamhitā* 1.16.17 (Ah 1939: 246), glossed कल्प as प्रयोग.

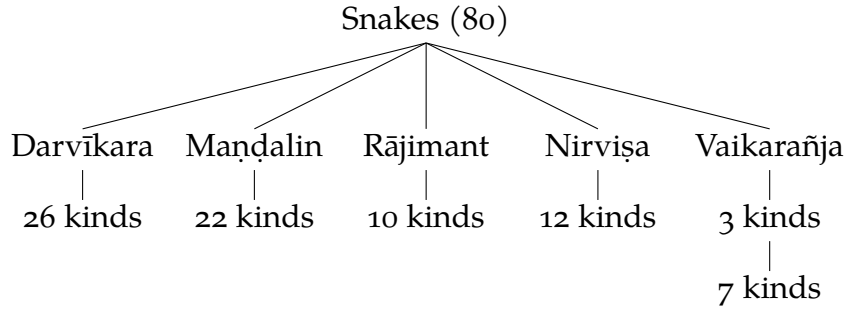


Figure 1: The taxonomy of snakes in the vulgate, 5.4.9–13ab (Su 1938: 571).

- 4 “My Lord, please speak about the number of snakes, and their divisions, the symptoms of someone who has been bitten, and the knowledge about the successive shocks (*vega*) of poisoning”.⁴²¹

[The Taxonomy of Snakes]

- 5 On hearing his query, that distinguished physician spoke.
 “The venerable snakes such as Vāsukī and Takṣaka are uncountable.
 6–9ab “They are snake-lords who support the earth, as bright as the ritual fire, ceaselessly roaring, raining and scorching. They hold up the earth, with its oceans, mountains and continents. If they are angered, they can destroy the whole world with a breath and a look. Honour to them. They have no role here in medicine.
 “The ones that I shall enumerate in due order are those mundane ones with poison in their fangs who bite humans.”⁴²²

9cd–10 “There are eighty kinds of snakes and they are divided in five ways:

⁴²¹ The expression “successive shocks” translates वेग, which in other contexts may mean “(natural) urge.” Here, it is rather the discrete stages or phases of physiological reaction to envenomation. Cf. the symptoms of cobra poisoning described by Wall (1913: 80).

⁴²² The next few verses are discussed in detail by Harimoto (2011: 101–104), who shows that in the taxonomy of snakes, the Nepalese version of the *Suśrutasamhitā* has greater internal coherence than the vulgate recension.

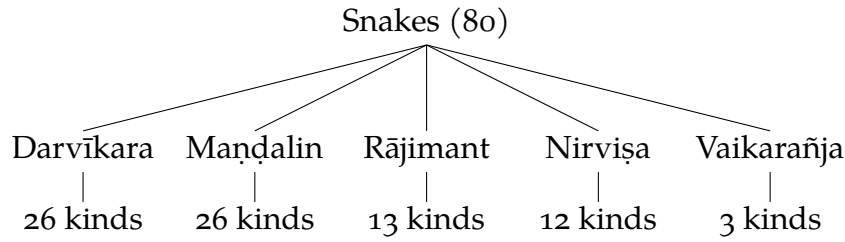


Figure 2: The taxonomy of snakes in the Nepalese version.

Darvikaras, Maṇḍalins, Rājīmats, and Nirviṣas. And Vaikarañjas that are traditionally of three kinds.⁴²³

- 11 “Of those, there are twenty and six hooded snakes, and the same number of Maṇḍalins are known. There are thirteen Rājīmats.⁴²⁴
- 12 “There are said to be twelve Nirviṣas and, according to tradition, three Vaikarañjas.

[Behaviours]

- 13–14ef “If they are trodden on, ill-natured or provoked or even just looking for food, those very angry snakes will bite. And that is said to happen in three ways: serpented (*sarpita*), torn (*darita*) and thirdly without venom (*nirviṣa*). Some experts on this want to add “hurt by the snake’s body”.⁴²⁵
- 15–16 “The physician can recognize the following as “ophidian (*sarpita*)”: Where a rearing snake makes one, two or more puncture-marks of its teeth, when they are deep and without much blood,⁴²⁶ accompanied

Or “There are 20 phanins and 6 maṇḍalins. The same number are known. There are 13 Rājīmats.” Or even, “there are 20 Phanins and six of them are Maṇḍalins.” Are phanins really the same as darvikaras?

423 Harimoto (2011) translated these names as “hooded,” “spotted,” “striped,” “harmless,” and “hybrid.” Figure 1 shows the taxonomy described in the vulgate text; Figure 2 shows the different and more logical division of the Nepalese version of the *Suśrutasamhitā*.

424 The phrasing of this śloka is awkward.

425 This might refer to constriction. The phrase reads like a commentarial addition rather than the main text of the *Suśrutasamhitā*.

426 The word उद्धृत “aroused” was glossed by Ḍalhaṇa at 5.4.15 (Su 1938: 571) as उन्मोद्य, a word not found as such in standard dictionaries (MW; KEWA; *Mahākośa*; Apte). Semantic considerations suggest that the word is not related to √muṭ “break” or mūta/mūṭa “woven basket.” Perhaps it is related to the Tamil மோதி (*mōṭi*), whose meanings include “arrogance, grandeur, display” (DED₂: #5133) or to faintly-documented forms like *moṭyate* “is twisted” (CDIAL: #10186). Ḍalhaṇa’s उन्मोद्य may

by a little ring of spots (*cuñcumālaka*),⁴²⁷ lead to degeneration, and are close together and swollen.

- 17 Where there are streaks with blood, whether it be blue or white, the physican should recognize that to be “torn (*darita*),” having a small amount of venom.
- 18 The physician can recognize the locations of the bites of a person in a normal state as being free from poison, when the location is not swollen, and there is little corrupted blood.
- 19 The wind of a timid person who has been touched by a snake can get irritated by fear. It causes swelling.⁴²⁸ That is “hurt by a snake’s body.”
- 20 Locations bitten by sick or frightened snakes are known to have little poison. Similarly, a site bitten by very young or old snakes has little poison.
- 21 Poison does not progress in a place frequented by eagles,⁴²⁹ gods, holy sages, **spirits**, and saints, or in places full of herbs that destroy poison.⁴³⁰

thus mean “twisting up” or “making an arrogant display.”

Note that पद “puncture-mark” (more literally, “footprint”) is being used in the same sense as in 1.13.19 (Su 1938: 57) when describing the marks on the body where a knife scarifies the skin before leeching. See footnote 49.

427 The usual dictionary lexeme is चञ्चु, not चुञ्चु as in the Nepalese witnesses. We translate “spots” following Ḍalhaṇa and Gayadāsa on 5.4.15 (Su 1938: 571), where they described a group of spots or swellings at the site of the bite. On the history of the word मालक, see Kieffer-Pülz 1996.

428 Wall (1913: 69) remarked on the difficulty of separating toxicity symptoms from the psychosomatic effects of terror:

The gravity of symptoms due to fright does not appear to me to be sufficiently recognised, though there is no doubt in my mind that fatal cases from this cause are abundant, especially among the timid natives of this country.

Wall went on to give several case studies in which patients experienced syncope or even died as a result of bites from toxicologically harmless creatures.

429 Ḍalhaṇa on 5.4.21 (Su 1938: 571) identified the सुपर्ण as a गरुड. On the bird called सुपर्ण, Dave (1985: 72 ff, 514) too noted that it may be a synonym for Garuḍa, and in some contexts may refer to the Golden Eagle, Golden Oriole, Lammergeyer, etc. Dave (1985: 199 ff, 492) noted again that the Garuḍa is a mythical bird but may refer to the Himalayan Golden Eagle and other species of eagle. He pointed out that historically, The original physical basis for गरुड as the नागाशी (snake-eater) was most probably the Sea-Eagle who picks up sea-snakes from the sea or sand-beach and devours them on a nearby tree... (Dave 1985: 201).

Dave continued with interesting reference to Śrīharṣa’s *Nāgānanda*.

430 For “spirits” the Nepalese version has भूत while the vulgate reads यक्ष.

[Characteristic Features of Snakes]

- 22 Darvīkara snakes are known to have hoods, to move rapidly, and to have rings, ploughs, umbrellas, crosses, and hooks on them.
- 23 Maṇḍalin snakes are known for being large and slow-moving. They are decorated with many kinds of circles. They are like a flaming fire because of their poisons.
- 24 Rājimant snakes are smooth and traditionally said to be, as it were, mottled with multicoloured streaks across and above.

[Classes of Snake]

- 25 Snakes that shine like pearls and silver, and that are amber and that shine like gold, and smell sweet are traditionally thought of as being of the Brāhmaṇa caste.
- 26 Warrior snakes, however, are those that look glossy and get very angry. They have the mark of the sun, the moon, the earth, an umbrella and bitumen.
- 27 Merchant snakes may traditionally be black, shine like diamond or have a red colour or be grey like pigeons.
- 28 Any snakes that are coloured like a buffalo and a tiger, with rough skin and different colours are known as servants.⁴³¹
- 31 All snakes that are variegated (Rājīmats) move about during the first watch of the night. The rest, on the other hand, the Maṇḍalins and the Darvīkaras, are diurnal.⁴³²
- 29 Wind is irritated by all hooded snakes; bile by Maṇḍalins and phlegm by those with many stripes.
- 30 Because of the two classes having greater, lesser or equal class, there is the characteristic of irritating two humours.
And he will explain the opposing view that is to be known as a result of the non-union of a male and female.⁴³³

431 Presumably “different” from the earlier-mentioned castes.

The sequence of the following three verses is slightly different from the vulgate (5.4.29–31 (Su 1938: 572)).

432 The readings of the vulgate, that Rājīmats are active in the early night, the Maṇḍalins in the later night, and Darvīkaras in the day, seem clearer.

433 The sense of the last phrase here is quite different from the vulgate, which says only that “details” will be explained below.

[Enumeration of Snakes]

34.1 In that context, here are the Darvīkaras.

- | | |
|--|---|
| 1. The Black snake (<i>kṛṣṇasarpa</i>); | (<i>mahāpadma</i>); |
| 2. The Big Black (<i>mahākṛṣṇa</i>); | 16. The Grass Flower (<i>apuṣpa</i>); |
| 3. The Black Belly (<i>kṛṣṇodara</i>); | 17. The Curd Mouth |
| 4. The All Black (<i>sarvakṛṣṇa</i>); ⁴³⁴ | (<i>dadhimukha</i>); |
| 5. The White Pigeon | 18. The Lotus Mouth |
| (<i>śvetakapota</i>); ⁴³⁵ | (<i>punḍarīkamukha</i>); |
| 6. The Rain Cloud (<i>valāhako</i>); | 19. The Brown Hut Mouth |
| 7. The Great Snake | (<i>babhrūkuṭīmukha</i>); |
| (<i>mahāsarpa</i>); | 20. The Variegated (<i>vicitra</i>); |
| 8. The Conch Keeper | 21. The Flower Sprinkle Beauty |
| (<i>saṃkhaṭāla</i>); | (<i>puṣpābhikīrṇnābha</i>); |
| 9. The Red Eye (<i>lohitākṣa</i>); | 22. The Mountain Snake |
| 10. The Gavedhuka (<i>gavedhuka</i>); | (<i>girisarpa</i>); |
| 11. The Snake Around | 23. The Straight Snake |
| (<i>parisarpa</i>); | (<i>ṛjusarpa</i>); |
| 12. The Break Hood | 24. The White Rip (<i>śvetadara</i>); |
| (<i>khaṇḍaphaṇa</i>); | 25. The Big Head (<i>mahāśīrṣa</i>); |
| 13. The Kūkuṭa (<i>kūkuṭa</i>); | and |
| 14. The Lotus (<i>padma</i>); | 26. The Hungry Sting (<i>alagarda</i>); |
| 15. The Great Lotus | |

34.2 Here are the Maṇḍalins

- | | |
|--|--|
| 1. The Mirror Ring | 9. The Big Jackfruit |
| (<i>ādarśamaṇḍala</i>); | (<i>mahāpanasaka</i>); |
| 2. The White Ring | 10. The Bamboo Leaf |
| (<i>śvetamaṇḍala</i>); | (<i>veṇupatraka</i>); |
| 3. The Red Ring (<i>raktamaṇḍala</i>); | 11. The Kid (<i>śīśuka</i>); |
| 4. The Speckled (<i>prṣata</i>); | 12. The Intoxicator (<i>madanaka</i>); |
| 5. The Gift of God (<i>devadinna</i>); | 13. The Morning Glory |
| 6. The Pilindaka (<i>pilindaka</i>); | (<i>pālindaka</i>); |
| 7. The Big Cow Snout | 14. The Stretch (<i>tantuka</i>); |
| (<i>vṛddhagonasa</i>); | 15. The Pale as a Flower |
| 8. The Jackfruit (<i>panasaka</i>); | (<i>puṣpapāṇḍu</i>); |

⁴³⁴ Not in vulgate.

⁴³⁵ The vulgate adds The Big Pigeon (*mahākapota*).

- | | |
|--------------------------------------|--|
| 16. The Six Part (<i>ṣaḍaṅga</i>); | 22. The Hand Decoration |
| 17. The Flame (<i>agnika</i>); | (<i>hastābharanaka</i>); |
| 18. The Brown (<i>babhru</i>); | 23. The Tatra (<i>tatra</i>); ⁴³⁶ |
| 19. The Ochre (<i>kaṣāya</i>); | 24. The Mark (<i>citraka</i>); |
| 20. The Khaluṣa (<i>khaluṣa</i>); | 25. The Deer Foot (<i>eṇīpada</i>). ⁴³⁷ |
| 21. The Pigeon (<i>pārāvata</i>); | |
- 34.3 Here are the Rājīmats.⁴³⁸
- | | |
|---|--|
| 1. The Lotus (<i>punḍarīka</i>); | 7. The Grass Drier (<i>trṇaśoṣaka</i>); |
| 2. The Stripe Speckle (<i>rājicitra</i>); | 8. The White Jaw (<i>svetahanu</i>); |
| 3. The Finger Stripe (<i>aṅgulirāji</i>); | 9. The Grass Flower |
| 4. The Two Finger Stripe | (<i>darbhapuṣpa</i>); ⁴³⁹ |
| (<i>dvyāṅgulirāji</i>); | 10. The Red Eye (<i>lohitākṣa</i>); ⁴⁴⁰ |
| 5. The Drop Stripe (<i>bindurāji</i>); | 11. The Ringed (<i>cakraka</i>); |
| 6. The Mud (<i>kardama</i>); | 12. The Worm Eater (<i>kikkisāda</i>); |
- 34.4 Here are the Nirviṣas.
- | | |
|---|--|
| 1. The Rain Cloud (<i>valāhako</i>); ⁴⁴¹ | 8. The Two-day (<i>dvyāhika</i>); |
| 2. Thei Snake Flag (<i>ahipatāka</i>); | 9. The Milk Flower |
| 3. The White Leaf (<i>śukapatra</i>); | (<i>kṣīrikāpuṣpa</i>); |
| 4. The Goat Swallower | 10. The Flower All (<i>puṣpasakalī</i>); |
| (<i>ajagara</i>); | 11. The Chariot of Light |
| 5. The Stimulator (<i>dīpyaka</i>); | (<i>jyotīratha</i>); |
| 6. The Ilikinī (<i>ilikinī</i>); | 12. The Little Tree (<i>vṛkṣaka</i>); |
| 7. The Year-Snake (<i>varṣāhika</i>); | |

[Breeding and Gender]

- 34.5 The Vaikarañjas originate out of contrary unions amongst the three colours.⁴⁴² Thus:

⁴³⁶ This seems implausible, but otherwise the list of Maṇḍalins would be short.

⁴³⁷ The list is short by one item. Perhaps the one of the snakes named in the vulgate, *citramaṇḍala*, *gonasa* or *piṅgala*, should be considered here.

⁴³⁸ The following list is one item short. The vulgate text, however, has several names that do not appear in the Nepalese Rājīmat list, for example *Sarṣapaka* and *Godhūmaka*.

⁴³⁹ Also in the Darvikara list.

⁴⁴⁰ Also in the Darvikara list.

⁴⁴¹ Also in the Darvikara list.

varṇa
means "col-
our" else-
where?

1. The Mākuli (*mākuli*);
2. The Poṭa Throat (*poṭagala*);
3. The Oil Stripe (*snigdharāji*);

Amongst those, the Mākuli (*mākuli*); is born when a male Black Snake mates with a female Cow Snout (*gonasa*), or the reverse. The Poṭa Throat (*poṭagala*) is born when a male Rājila mates with a female Cow Snout (*gonasa*) or the reverse. The Oily Stripe (*snigdharāji*) is born when a male Black Snake mates with a female Rājimat, or the reverse. Their poison is like that of their father, because it is the superior one out of the two; but others say it is like the mother. Thus eighty of these snakes have been described.

- 35 Amongst them, males have large eyes, tongues and heads.⁴⁴³ Females have small eyes, tongues and heads. Neuters have both characteristics, and are slow to exert themselves or be angry.⁴⁴⁴
- 36 In that context we shall give instruction in a general way about the sign of having been bitten by any of the snakes.

For what reason?

Because poison acts quickly, like a fire with an oblation, a honed sword, or a thunderbolt.⁴⁴⁵ And ignored for even a period of time, it can drag the patient away. There is not even an opportunity to follow the literature.⁴⁴⁶

And when the symptom of being bitten is stated, there will be three ways of treating it because there are three kinds of snake. Therefore we shall explain it in three ways. “For this is good for people who are ill, and it removes confusion and in this very case it prevents all symptoms”.⁴⁴⁷

442 The word *varṇa* in this chapter normally means “colour” not “class.” (“Class is expressed by “jāti.”) While *kṛṣṇasarpa* is clearly a colour-type, it is less obvious that *gonasī* is a special colour, and *rājimat* is a group of snakes.

443 The vulgate includes the snake’s mouth in this and the next list.

444 The reading मन्दचेष्टाक्रोधा is an awkward compound; possibly the original reading was मन्दचेष्टा: + अक्रोधा and sandhi was applied twice.

445 Perhaps the image suggested by “a fire with an oblation” is that of the Pravargya, in which a large flame rises suddenly from the ritual fire.

446 The idea seems to be that there is no time to consult the verbose āyurvedic teachings. The “extensive meaning of the collection of statements (वाक्समूहार्थविस्तार)” is singled out as one of Āyurveda’s virtues in 5.8.142 (Su 1938: 594). Alternatively, perhaps the patient is unable to understand what the doctor is saying to him.

447 In the next passage, the symptoms of snake poisoning are indeed explained under

[Symptoms of snakebite]

- 37 In this context, the poison of a Darvīkara causes the skin, nails, eyes, mouth, urine, feces, and the bitemark to be black; there is driness, the joints hurt and the head feels heavy; the waist, back and neck feel weak; there is yawning, the voice becomes faint, there is gurgling, paralysis, dry throat, cough, wheezing, and hiccups; the wind goes upwards, the patient convulses with sharp pain, black saliva dribbles out, foam appears, the ducts (*srotas*) are blocked and every kind of pain that is due to wind.⁴⁴⁸

The poison of a Maṇḍalin causes the skin, nails, eyes, teeth, mouth, urine, feces, bitemark to be yellow; there is a desire for cold, a temperature, giving off fumes,⁴⁴⁹ a burning feeling, thirst, intoxication, fainting, fever, haemorrhaging (*śonitāgamana*), and the degeneration of the flesh and fat above and below. There is swelling, suppuration of the bite, metamorphopsia (*viparītadarśana*), anger caused by the suffering, and every kind of pain that is due to bile.⁴⁵⁰

The poison of a Rājīmat causes the skin, nails, eyes, teeth, mouth, urine, feces, and bitemark to be pale; there is a cold fever, the hair stands on end, there is stiffness and swelling of the limbs including the site of the bite. There is a discharge of viscous phlegm, vomiting, itchy eyes, and a rattling sound. The breath is obstructed and there is every kind of pain due to phlegm.

- 38 In that context, “someone bitten by a male gazes upwards, by a female horizontally, and by a neuter, downwards.” One bitten by a pregnant snake has a pale face and becomes swollen (*ādhmāta*). One bitten by a

three headings.

448 Cf. the similar symptoms of snake venom poisoning by the so-called Brahmin warriors of *Harmatelia* described by the classical author Diodorus Siculus (fl. ca. 30-60 BCE) (Eggermont 1975: 108).

449 The term “giving of fumes (परिधूपयन)” is not in MW: 596 as such, although परिधूपन, परिधूमन and परिधूमायन are cited and referred to the *Suśrutasaṃhitā*. “Giving off fumes (परिधूपन)” is listed at *Suśrutasaṃhitā* 2.6.13 (Su 1938: 291) amongst the symptoms of urinary disease caused by phlegm. The editors note a variant reading परिधूमायन but do not tell us in which manuscript (Su 1938: 291, n. 3). Ḍalhaṇa on 2.6.13 (Su 1938: 292) glossed परिधूपन as “hot all over (समन्ततस्तापः)” and in our current passage as “hot over the whole body (सर्वाङ्गसन्तापः)” (Su 1938: 573). See also *Mahākośa*: 1, 429: धूमायन “अङ्गानां धूमोद्धमनमिव” citing the *Suśrutasaṃhitā*.

450 Ghosh et al. (2023) describes visual disturbances due to snake envenomation.

recently-delivered snake is afflicted with abdominal pain and urinates with blood. One bitten by a hungry snake craves food. Those bitten by an old snake have delayed and slow reactions. And one bitten by a young snake is fast and keen. One bitten by a non-venomous snake has the characteristic mark of non-poisoning.⁴⁵¹ Some that are bitten by a blind snake become blind. A constrictor (*ajagara*) is deadly because it swallows, not because of poison.

[Toxic Pulses]

39 In that context, all snake toxins have seven toxic pulses (*viṣavega*).⁴⁵²

[**Darvīkaras**] Thus, at the first pulse of the Darvīkaras the poison corrupts the blood. That corrupted blood turns black. Because of that, blackness and a feeling of ants crawling about on the body develop.⁴⁵³ In the second pulse, it corrupts the flesh. That causes extreme blackness and lumps.

In the third, it corrupts the fat. That causes a discharge at the bite, heaviness of the head and an eclipse of the vision.⁴⁵⁴

In the fourth, it penetrates the trunk of the body (*koṣṭha*). From there, it irritates the humors, particularly phlegm. That causes exhaustion and oozing phlegm, and dislocation of the joints.

In the fifth pulse, it penetrates the bones. That causes breaking of the joints, hiccups and burning.

In the sixth pulse, it penetrates the marrow. That causes humours in the seat of fire in the gut (*grahaṇī*), heaviness of the limbs, diarrhoea, pain in the heart and fainting.⁴⁵⁵

In the seventh, it penetrates the semen and greatly irritates the vyāna breath (*vyāna*), and causes the phlegm (*kapha*) to run imperceptibly out

451 The grammar of अविषलिङ्गम् is not quite right; it should be a masculine or plural bahuvrīhi.

452 Cf. the same concept in the context of plants, at 113

453 Strictly, we would expect a dual verb here, instead of the plural of the witnesses.

454 Dalhaṇa on 5.4.39 (*Su* 1938: 574) glossed the last expression as “blockage of the vision (दृष्ट्यवरोध).”

455 The “seat of fire in the gut (ग्रहणी)” is an ayurvedic organ in the digestive tract that does not correspond to any specific organ known to contemporary anatomy. For discussion, see *Mahākośa*: v. 1, 304; Meulenbeld 1974: 619; Das 2003: 544–545.

of the tubes (*srotas*). That causes the appearance of mucous (*śleṣman*), breaking of the hips, back and shoulders, impediment to all movements and shortness of breath.

[Mandalins] Thus, at the first pulse of the Mandalins, the poison corrupts the blood. Corrupted by that, it turns yellow. That causes a yellow appearance and a feeling of heat all over (*paridāha*).

In the second pulse, it corrupts the flesh. And that causes the limbs to be very yellow and an extreme feeling of heat all over (*paridāha*), and swelling at the bite.

In the third, it corrupts the fat. That causes a discharge at the black bite and sweating.

In the fourth, it penetrates as before and brings on fever.

In the fifth, it causes heat in all the limbs.

In the sixth and seventh, it is the same as before.

[Rājīmats] Thus, in the first pulse of the Rājīmats, the poison corrupts the blood. Corrupted by that, it turns yellow. It causes a person to have hair standing on end and a pale appearance.

In the second pulse, it corrupts the flesh. That causes him to become pale and to become extremely benumbed (*jāḍya*).

In the third, it corrupts the fat. That causes moistness of the bite and runny eyes and nose.

In the fourth, it is the same as before. After penetrating, it brings on manyāstambha (*stiffness of the neck*) and heaviness of the head.

In the fifth, speech is confused and there is a cold fever.

In the sixth and seventh, it is the same as before.

[Summary Verses]

40 There are verses on this.

It is well known that there are seven interstitial layers (kalā) in between the bodily tissues (dhātu). Poison passing through these one by one causes the toxic pulse (vega).⁴⁵⁶

⁴⁵⁶ See note 416 above.

- 41 *The interval taken by the deadly substance (kālakalpa), propelled (√ūh) by air (samīraṇa), to cut the layers of skin is known as the “pulse interval (vegāntara)”.*⁴⁵⁷
- 42 *In the first pulse, an animal has a swollen body, is distressed and broods.*⁴⁵⁸
- In the second, it dribbles somewhat,⁴⁵⁹ the hair stands up on its body, and it has pain (√pīḍ) in the heart.*
- 43 *The third stage brings headache and it breaks the ears and necks.*⁴⁶⁰
- In the fourth, the bewildered creature trembles and gnashing its teeth, it gives up life.*
- 44–45 *Some experts say that elephants have three toxic pulses.*⁴⁶¹
- So, at the first pulse, an bird becomes bewildered and is confused from that point on. At the second, the bird is distressed and, crying out, it dies.*
- Some people claim that where birds are concerned, there is really just a single toxic pulse (vega) and that amongst animals like cats and mongooses, poison does not take much effect.*⁴⁶²

457 Ḍalhaṇa on 5.4.41 (Su 1938: 574) glossed कालकल्प as मृत्युसदृशं विषं “the poison resembles death.”

458 The verb √प्रध्वे “meditate, be thoughtful, brood” is unexpected here and in the second class, an epic form. Ḍalhaṇa on 5.4.42 (Su 1938: 574) noted that some manuscripts did not include the text about animals from this point on. The fact that these verses are present in the Nepales witnesses testifies to their antiquity.

459 The Nepalese witnesses use लालि-, not लाला-, for “saliva.”

460 The scribe of MS H emended the text to read कण्ठग्रीव with the vulgate. Intransitive use of pass. भञ्ज्.

461 On अन्तःस्वेद as “elephant,” cf. Arthaśāstra 9.1.46 (Kangle 1969: v. 1, 219; Olivelle 2013: 351): हस्तिनो ह्यन्तःस्वेदाः कुष्ठिनो भवन्ति ॥ ४६ ॥

462 See on this subject: Brunton and Fayrer 1909: 39–40; S. A. Minton and M. R. Minton 1969: 88–89 (references taken from HIML: 1B, 399, n. 124.

Kalpasthāna 4: Therapy for those bitten by Snakes

Introduction

Literature

A brief survey of this chapter's contents and a detailed assessment of the existing research on it to 2002 was provided by Meulenbeld.⁴⁶³

Translation

- 1 Now we shall explain the procedure (*kalpa*) about the therapy for someone bitten by a snake.⁴⁶⁴
- 3 For any person bitten on a limb by any snake, one should first of all make a strong binding, at four fingers measure above the bite.⁴⁶⁵

⁴⁶³ [HIML](#): IA, 294–295. In addition to the translations mentioned by Meulenbeld ([HIML](#): IB, 314–315), a translation of this chapter was included in Sharma [1999–2001](#): 3, 35–45.

⁴⁶⁴ On कल्प, see note [420](#).

⁴⁶⁵ Application of a tourniquet is strongly deprecated by modern establishment medicine, which relies on antivenom medications (e.g., Pillay [2013](#): 150–151 et passim in the literature).

Uttaratantra

Todo list

■ Can't be "sedation"	35
■ JG could you provide a standard citation reference for this information?	61
■ I have replaced the plant-names with entries from my plant database.	62
■ This is a change we should make in the edition.	67
■ You need not give all the grammatical details about śrotādi. Assume you are talking to knowledgeable Sanskrit scholars.	68
■ Perhaps <i>kalka</i> here could also mean the <i>Terminalia Bellerica</i> (विभीतक).	70
■ Euphorbia Antiquorum (Antique spurge)	72
■ The webpage https://hindi.shabd.in/vairagya-shatakam-bhagacharya-arjun-tiwari/post/117629 says that this verse belongs to the <i>Nītiratna</i> . I could not find this text.	75
■ The provisional edition should be modified accordingly.	77
■ There, Ḍalhaṇa comments that deliberation on <i>avapīḍa</i> had been done earlier when it was mentioned. Find that description to know more details.	79
■ Search for the section where the treatment of <i>ākṣepaka</i> is described.	80
■ Make the first letter of sentence capital.	80
■ ?	86
■ ?	86
■ ?	86
■ (?)	86
■ Cf. Arthaśāstra 1.21.8.	94
■ I'm still unhappy about this verse.	97
■ Mention this in the introduction as an example of the scribe knowing the vulgate.	97
■ fn about sadyas+	97

■ Bear's bile instead of deer's bile.	98
■ punarṇavā in the N & K MSS	99
■ śrita for śṛta	99
■ explain more	99
■ Medical difference from Sharma.	100
■ example where the vulgate clarifies that these should be used separately; appears to be a gloss inserted into the vulgate text.	100
■ The two uses of prāpta are hard to translate. prāptāḥ → kṣipram is an example of the vulgate banalizing the Sanskrit text to make sense of a difficult passage.	100
■ √ vyadh not √ vedh (also elsewhere and for the ears), causative optative.	100
■ -> ativiṣa	110
■ Look up the ca. reference.	110
■ Come back to the issue of "kalpa". Look up passages in the Kośa.	117
■ write footnote: don't repeat ativiṣā; vulgate similar to H.	121
■ material corresponds to SS.1.45.205ab, where it describes how alcohol affects the body.	123
■ Or "There are 20 phaṇins and 6 maṇḍalins. The same number are known. There are 13 Rājīmats." Or even, "there are 20 Phaṇins and six of them are Maṇḍalins." Are phaṇins really the same as darvīkaras?	129
■ grammar	130
■ ri- ṛ-?	132
■ varṇa means "colour" elsewhere?	133
■ where is cutting with a knife related to removing bile or phlegm.	144
■ maṣī burned charcoal. Find refs.	144
■ find ref.	149
■ Check out these refs.	150
■ meaning of kalpa	150
■ or a dual?	155
■ Footnote here about who is speaking to whom.	143
■ a kind of asthma?	149
■ Not happy with the last part.	149
■ connecting with the previous pāda?	149
■ (atyartha? excessive?)	150
■ for...dvādaśādhikāḥ? not clear to me, is it dvādaśādhikāḥ?	150
■ (any better medical terms for them?)	150

■ (since the word lagha is not clear to me)	151
■ (Not too happy with it.)	151
■ (not sure about it)	151
■ (Not in vulgate)	151
■ (I am looking for a better translation)	151
■ (I'd need to rework on it).	152
■ (I'd need to rework on it and think about the sequencing of the number).	152
■ (āmadoṣa? Not too sure)	152
■ (2nd hemistich is incomplete)	152
■ (not too sure about the meaning of vyapada)	152
■ not so sure about sodāvarte	152
■ not so sure about it, MW mentions others like Cordia Myxa and Alangium hexapetalum	153
■ not sure about it	153
■ (sāmāhāya- any better word?)	153
■ Not so happy with this translation	154
■ (Not happy with it)	155
■ (the second hemistich is incomplete)	155
■ can śṛta mean here boiled milk? Not happy with the last part . . .	155
■ the rest of the text is unclear to me	155
■ (not so sure about it). [ghṛtābhyaṅgonavasthāsu should it be like ghṛtābhyaṅgo 'navasthāsu?, svedā lepaḥ ghṛtābhyaṅgonavas- thāsu ca yojayet] (Not so happy with the translation)	156
■ See also Ḍalhaṇa at 1.1.1 (Su 1938: 1)	165
■ See chapter 40 of Sūtrasthāna.	167
■ vasā / medas / majjan	167
■ Does bhūtādi a compound or it means ahaṅkāra or ego?	167

