

Theory and Practice of Traditional Medicine in India (1) — A Case of Contact with Spider Venom —

TSUTOMU YAMASHITA*
Kyoto Gakuen University, Kyoto, Japan

MADHU K. PARAMESWARAN
Vaidyaratnam P.S. Varier Ayurveda College, Kottakkal, Kerala, India

Abstract

We present a case study of Āyurvedic medicine. The purpose of this study is not to show a rare clinical case or the effectiveness of any specific drug, but to investigate how the traditional theory of *Āyurveda* has been applied to a common case by a physician who mainly observes the traditional ways of Āyurvedic treatment. In this paper, we examine a case of contact with spider venom.

Key Words

Traditional Medicine, Ayurveda, Case Study

1. Introduction

We report a case study of Āyurvedic medicine at a private clinic, the U*** clinic in Kerala, India. The attending physician of this case was Vaidya B*** N***, a physician of *Āyurveda* who specializes in poison-healing (*viṣavaidya*). We aimed to investigate how traditional medical theory has been applied to actual therapeutic practice by a physician of *Āyurveda*.

* Author for correspondence. Address: 1-1 Nanjo Otani, Sogabe-chou, Kameoka-shi, Kyoto-fu, 621-8555 Japan. E-mail: atriclub@gmail.com

Various case studies demonstrating the effectiveness of specific drugs or treatments have been performed in recent years in the field of traditional medicine. However, few studies have considered the theoretical grounding in various aspects of clinical practice of traditional medicine in India.¹ We propose that, to achieve a comprehensive understanding of traditional medicine, it is essential to demonstrate which traditional medical theory is applied and how it works in actual clinical practice. In these observations, in addition, we paid careful attention to the influence of or interference by modern medical knowledge.

From this perspective, in this study series, we selected relatively common and simple clinical cases from clinics or hospitals where traditional treatment methods were comparatively preserved, and described each case in detail. In these cases, we focused on revealing the thought process of physicians of traditional medicine at each stage of clinical practice, i.e., medical examinations, diagnosis, choice of treatment methods and drugs, and usages of drugs.

We attempted to reproduce each stage of clinical practice as accurately as possible based on our interviews with the physicians, patients and, in some cases, family members of the patients with their consent. In the note subsections of our articles, we attempted to explore the theoretical context of the practices and considered their meaning and purpose at each stage with an emphasis on the association between theory and practice. In the footnotes, we provided references and quotations from the traditional texts of *Āyurveda* to clarify the sources of traditional medical theory on which the physicians depended. These source texts were identified and translated by the authors. In some cases, the physicians indicated the source texts or other sources of traditional medical theory with their own interpretations, in which cases the authors added notes in the articles of this study series.

This study series was conducted as one of the activities of the Indo-Japanese research project, ĀTMAN Project (Āyurvedic Treatment's Medical Annotations and Notes Project) directed by the authors (Tsutomu Yamashita and Madhu K. Parameswaran) and supported by JSPS (Japan Society for the Promotion of Science).

¹For case studies of *Āyurveda*, see, for example, Warier (2006).

2. Explanatory Notes

- [] : Supplementary explanation
- () : Paraphrase of the previous word
- The personal names of living persons are shown by initial characters with asterisks to protect their privacy.
- Sanskrit technical terms are specified in italics and parentheses following our English translations without avoiding repetition in most instances to show the original meanings of the terms.
- Some essential and commonly-used Sanskrit technical terms are indicated in italics without their English translations, for example, *doṣa*, *vāta*, *pitta* and *kapha*.
- The transliteration of Malayalam words is mainly based on the transliteration system provided in Andronov (1996).

3. Case Presentation

A 83-year-old Indian housewife (D*** K. K.) presented to the U*** clinic in Kerala on 2nd January 2009 with a sensation of itching on her left ankle for the past two months. The patient also complained of feeling heavy and swollen on her left leg, heat throughout the body and loss of appetite. The itching sensation that initially limited to the left ankle gradually spread to the right ankle. The patient found scratch-like reddish lines on the anterior surface of the knees two weeks ago. These reddish lines had been subsiding since one week ago. The patient had a difficulty in bending the left knee, because of the feelings of heaviness and swelling.

4. Case History

The patient had a walk in a wasteland near her house in a rural area two months ago. On the evening of the same day, the patient began to feel a slight sensation of itching on the left ankle. When the sensation of itching gradually spread to the right ankle and became difficult to bear, the patient sought medical advice to the U*** clinic on 2nd January 2009. Before the first visit to the U*** clinic, the patient did not have any medical treatments of this disorder. The patient had no previous history, nor family history of these complaints.

5. Diagnosis²

5.1. Prodromes (*pūrvarūpa*)

None

5.2. Symptoms (*rūpa*)

- Sudden itching sensation on the left ankle, which gradually spread also to the right ankle
- Swelling and heaviness on the left leg
- Reddish lines on the skin surfaces of the knees
- Feeling of heat throughout the body
- Loss of appetite

5.3. Onset (*saṃprāpti*)

Itching sensation (*kaṇḍū*) and swelling (*śopha*) are considered to be due to involvement of *kapha doṣa*.³ Reddish color of the skin (*rāga*) and the rise in body temperature (*uṣṇa*) are considered to be due to involvement of *pitta doṣa*.⁴ These disorders especially in the skin (*tvac*)⁵ are attributed to vitiation of *rasa* among the bodily elements (*dhātu*) by *kapha* and *pitta doṣas*, because the skin

²The five characteristics (*pañcalakṣaṇa nidāna*) of diagnosis, i.e., prodrome (*pūrvarūpa*), symptom (*rūpa*), onset (*saṃprāpti*), cause (*nidāna*) and alleviating factor (*upaśaya*) are regarded as the important clues for diagnosis of *Āyurveda*. See CS Ni 1.3-13; AHS Ni chap. 1; AS Ni chap. 1; MN chap. 1 with its commentary, the *Madhukośa*.

³Itching (*kaṇḍū*) and swelling (*śopha*) are attributed to the functions (*karman*) or signs (*lakṣaṇa*) of aggravated *kapha* in CS Sū 20.18; AHS Sū 12.53-54ab; AS Sū 20.16.

⁴Burning sensation (*dāha*), reddish discoloration (*rāga*) and heat (*uṣṇa*) are attributed to the functions (*karman*) or signs (*lakṣaṇa*) of aggravated *pitta* in CS Sū 20.14-15; AHS Sū 12.51d-52; AS Sū 20.16.

⁵CS Sū 11.48 refers to the three pathways of disease in the human body including skin (*tvac*): “It is said that there are three pathways of diseases, [i.e.,] the branches or limbs (*śākhā*); the vulnerable points (*marman*) together with the bones (*asthi*) and joints (*saṃdhī*); and the viscera (*koṣṭha*). Among them, the branches or limbs (*śākhā*) are the bodily elements (*dhātus*), [i.e.,] blood (*rakta*) and so on, and skin (*tvac*). This [pathway] is [also called] the peripheral (*bāhya*) pathway of disease.” (*trayo rogamārgā iti. śākhā, marmāsthīsandhayaḥ, koṣṭhaś ca. tatra śākhā raktādayo dhātavaḥ tvac ca, sa bāhyo rogamārgaḥ. ...*) See also AHS Sū 12.44cd-45; AS Sū 22.9.

(*tvac*) is regarded to be closely related to the *rasa dhātu*, and to be a manifestation of the *rasa*.⁶ Loss of appetite and feeling of heaviness on the leg are seen as the signs of ripening (*pacyamāna*) stage of inflammatory swelling (*śopha*)⁷ and ulcer (*vraṇa*).⁸

⁶Dalhaṇa, one of the commentators of SS, comments on the essential constituent (*sāra*) of skin (*tvac*) in SS Sū 35.16: “The essential constituent of skin is [the same as] that of *rasa*. *Rasa* is located in skin. [This fact] is denoted by the word, *rasa*.” (*tvaksāraṇi rasasāraṇi, tvaksābdena tvakstho raso 'bhihitah.*) For the semantic changes of the seven bodily elements (*dhātus*) from a historical perspective, see Jamison (1986); HIML (IB, 80, n. 71).

⁷The term, “inflammation” (*pāka*) should be used with caution, because the concept of inflammation in *Āyurveda* is similar, but not the same as the preliminary concept of local acute inflammation in historical Western medicine. For example, the main four signs of inflammation (redness, swelling, heat and pain), see *De Medicina* III.10. Cf. Rocha E Silva (1978). In *Āyurveda*, inflammation (*pāka*) is regarded as one of the actions of *pitta*. See, for example, CS Sū 20.15; AHS Sū 12.10-12, 51cd-52; AS Sū 20.3, 10. Cf. HIML (IB, 30, n. 421).

⁸The three stages of inflammatory swelling (*śopha*) and ulcer (*vraṇa*), i.e., unripened (*sāma*), ripening (*pacyamāna*) and ripened (*pakva*) stages are distinguished in SS Sū 17.5-6; AHS Sū 29.2cd-6ab; AS Sū 38.5-7. Cf. CS Ci 25.52.

For ulcer (*vraṇa*), AHS Sū 29.1-2ab reads: “Ulcer (*vraṇa*) mainly arises from inflammation (*pāka*) following swelling (*śvayathu*). [The physician] should make efforts to treat [ulcer (*vraṇa*)] preventing inflammation (*pāka*) with very cold plastering (*lepa*), shower-bath (*seka*), blood-letting (*asramokṣa*), purification (*saṃśodhana*) and so forth.” (*vraṇaḥ sañjāyate prāyaḥ pākāc chvayathupūrvakāt. tam evopacaret tasmād rakṣaṇ pākam prayatnataḥ. suśūtalepasekāsramokṣasaṃśodhanādibhiḥ.*) Cf. Mehra (2005).

For unripened (*sāma*) stage, AHS Sū 29.2cd: “Unripened (*sāma*) inflammatory swelling (*śopha*) is small, hard and immovable, has a little heat and pain, keeps the same color [of the original region].” (*śopho 'lpo 'lpoṣṇaruk sāmāḥ savarnaḥ kathanāḥ sthiraḥ.*)

For ripening (*pacyamāna*) stage, AHS Sū 29.3-4: “Ripening (*pacyamāna*) [inflammatory swelling (*śopha*)] is discolored to reddish color, spreads just like a bladder with piercing pain and acute pain in the limbs, is accompanied by yawning, excitation, loss of appetite, burning sensation, heat, thirst, fever and loss of sleep, pours out [just like] soft melted butter resembling the ulcer; [the patient] is unbearable [even] by being touched [on the region].” (*pacyamāno vivarṇas tu rāgī bastir ivātataḥ. sphuṭatīva sanistodaḥ sāṅgamarda-vijṛmbhikaḥ. saṃrambhārucidāhoṣāṭṛḍjvarānidratānvitah. styānaṃ viṣyandayaty ājyam vraṇavat sparśanāsahaḥ.*)

For ripened (*pakva*) stage, AHS Sū 29.5-6ab: “At the ripened (*pakva*) stage, [the inflammatory swelling (*śopha*)] has a weak force, becomes reduced [in size] and whitish-yellow [in color], gets wrinkles, becomes sunk on the edges, has a raised part in the middle, mild

5.4. Presumed Cause (*nidāna*)

The fact that the patient had a sudden onset of itching sensation immediately after a walk in the wasteland without any apparent prodromes (*pūrvarūpa*) suggests that the cause of the disorders is exogenous (*āgantuja*) one, especially some kind of exogenous toxin (*viṣa*).⁹ Among the exogenous toxins, the physician considered that the most likely cause (*nidāna*) was a kind of spider venom (*lūtāviṣa*) judging from the symptoms and their mode of onset characterized by the *kapha* and *pitta doṣas*.¹⁰ In fact, the physician has frequently come across this kind of spider having venom (*viṣa*) dominated by *kapha* and *pitta doṣas* in the flatland area including the region where the patient's house is located, and had some clinical experiences caused by this kind of spider (*lūtā*) and its venom (*viṣa*).¹¹

The absence of comparatively severe symptoms and that of any bite marks on the patient's skin suggested that the patient had not been directly bitten by spider,¹² but had only gotten into contact with spider's body or its venomous substance (*viṣa*). For the supports of this view, we can find some descriptions in

itching, swelling and so on; a movement of pus (*pūya*) is perceived by touch just like water in the bladder.” (*pakve'lpavegatā mlāniḥ pāṇḍutā valisambhavaḥ. nāmo'nteṣūnnatir madhye kaṇḍūśophādīmārdavam. spr̥ṣṭe pūyasya sañcāro bhaved bastāv ivāmbhasaḥ.*)

⁹CS Ci 25.6cd-7: “The endogenous (*nija*) [ulcer (*vraṇa*)] arises from bodily *doṣa*. The exogenous (*āgantū*) [ulcer (*vraṇa*)] arises from extracorporeal cause. The exogenous ulcers (*vraṇa*) are caused by injury, binding, falling down; due to wounds caused by fangs, teeth, and nails; in the same way, by contact with poison, fire, and sharp tools.” (*nijaḥ śarīradoṣoṭtha āgantur bāhyahetujaḥ. vadhabandhaprapatanād daṁṣṭrādantanakhakṣatāt. āgantavo vraṇās tadvad viṣasparśāgniśastrajāḥ.*) See also AHS Utt 25.1-2ab.

¹⁰For spider (*lūtā*), its venom, bite wound and treatment, see CS Ci 23.144-46; SS Ka 8.75-134; AHS Utt 37.45-86; AS Utt chaps. 44-45.

¹¹For modern medical viewpoint on spider-bites and contact with spider venom, see, for example, Isbister (2002); Isbister and Fan (2011).

¹²For bite wounds by venomous spiders in general, AHS Utt 37.55cd-58ab runs: “All of spider-bite wounds are similar to *dadru-maṇḍala* (a type of *kuṣṭha*), are bright, dark, reddish-brown, yellow or dark-brown [in color], soft and raised, are black or dark-brown in the middle, covered by a net in the end part, are like *visarpa*, accompanied by swelling, have fever, severe pains, rapid ripening process with fever, moisture, suppuration and rupturable part.” (*lūtādaṁśās ca sarvo'pi dadrumaṇḍalasaṁnibhaḥ. sito'sito'ruṇaḥ pītaḥ śyāvo vā mṛdur unnataḥ. madhye kṛṣṇo'thavā śyāvaḥ paryante jālakāvṛtaḥ. visarpavāṁś chophayutas tapyate bahuvedanaḥ. jvarāśupākavikledakothāvadaraṇānvitaḥ.*) See also CS Ci 23.144-46; AS Utt 44.12-14.

the traditional texts of *Āyurveda* about the spider venom (*lūtāviṣa*).¹³

The fact that the itching sensation had spread to the other part of the body (the right ankle) was considered to be caused by the secondary contact with the patient's vitiated bodily element, *rasa dhātu* or exudate fluid.¹⁴

5.5. Alleviating Factor (*upaśaya*)

Not clear

5.6. Differential Diagnosis

Judging from the symptoms (*rūpa*), onset (*saṃprāpti*) and presumed cause (*ni-dāna*), the following possibilities were ruled out from the diagnosis of this case.

- Contact with vegetable poison (*sthāvaraviṣa*), snake venom (*sarpaviṣa*) or insect venom (*kīṭaviṣa*) other than spider venom (*lūtāviṣa*)
- Direct bite wound by venomous snake, rat (*mūṣika*) or venomous insect

5.7. Provisional Diagnosis

Skin lesion (*tvagdoṣa*) that is marked by inflammatory swelling (*śopha*) and ulcer (*vraṇa*) at the ripening (*pacyamāna*) stage, caused by contact with spider venom (*lūtāviṣasparśa*) dominated by *kapha* and *pitta doṣas*.

5.8. Note on the Diagnosis

The patient did not clearly know what happened at the onset of disorders. The physician had no choice but to presume the cause (*nidāna*) of disorders from the condition of onset (*saṃprāpti*) and the characteristics of symptoms (*rūpa*)

¹³ AHS Utt 37.58cd-59ab = AS Utt 44.15 runs: "These [spiders] emit poison through the eight [bodily elements, i.e.,] breath, fang, feces, urine, semen, saliva, nail and menstrual discharge, especially from the mouth." (*śvāsadaṃṣṭrāśakṛṇmūtraśukralālānakhārtavaiḥ. aṣṭābhir udvamaty eṣā viṣaṃ vaktrād viśeṣataḥ.*)

AHS Utt 37.60ab = AS Utt 44.21cd runs: "The garments and so on that contaminated by this [poison] lead to [the person's] disease when these (garments and so on) touch the [person's] body." (*taddūṣitaṃ ca vastrādi dehe prkṭaṃ vikāraḥ.*) See also SS Ka 3.5, 8.85-88ab.

¹⁴ AHS Utt 37.58ab reads: "If the [patient's] body is touched by [exudate] fluid (or pus) (*kleda*) [from spider-bite wound], an ulcer (*vraṇa*) would be formed on the touched part." (*kledena yat sprṣaty aṅgaṃ tatrāpi kurute vraṇam.*)

in this case. In such a case of diagnosis, the physician attached greater importance to the identification of the presence and effects of *doṣas* behind the noticeable symptoms than to that of the real cause. The treatments of this case were administered based on this provisional diagnosis and the physician's understanding of the conditions of *doṣas* at each stage.

6. Treatments

The treatments were provided mainly for ulcer (*vraṇa*) accompanied with itching sensation (*kaṇḍū*) and swelling (*śopha*) caused by vitiated *kapha* and *pitta doṣas* due to exogenous toxin.¹⁵

6.1. Treatments at the Initial Visit

At the initial visit of the patient to the U*** clinic on 2nd January 2009, the physician instructed the patient to prepare a paste called Dhattūra-paste (*dhattūra-lepana*)¹⁶ by the patient herself according to the prescription found in a traditional Malayalam text of poison- healing, the *Jyotsnikā*,¹⁷ and to apply it on the suffering part externally.¹⁸ In addition, the physician advised the patient

¹⁵SS Ka 8.135 reads: “Physician should treat all of ulcers (*vraṇa*) caused by insect-bite and snake-bite in a similar way for vitiated (*duṣṭa*) [ulcers (*vraṇa*)] while inflammatory and suppurative processes continue.” (*kīṭadaṣṭavraṇān sarvān ahidaṣṭavraṇān api. ā dāhapā-kāi tān sarvān cikitsed duṣṭavad bhiṣak.*)

¹⁶For the initial treatment of inflammatory swelling (*śopha*), SS Sū 18.3 runs: “[The application of] a medicated ointment or paste (*ālepa*) is the initial treatment. This [treatment] is common and the most important for all of inflammatory swellings (*śopha*).” (*ālepa ādya upakramah, eṣa sarvaśophānām sāmānyah pradhānatamaś ca, ...*)

¹⁷The physician, Vaidya B*** N*** indicated the reference of Dhattūra-paste in the *Jyotsnikā*. For the *Jyotsnikā*, see HIML (IIA, 456); Yamashita, Brahmadathan U.M.T. and Madhu K. Parameswaran (2010, 106).

¹⁸On Dhattūra-paste, the *Jyotsnikā*, Maṇḍalīcīkīṭṣā 52-53 runs: “By making a hole in [1] an immature fruit of *dhattūra* (*ummattū* in Mal.), [one] should remove the half of seeds, and stuff it (the hole) with [2] a little rock salt (*uppi*). [One] should boil it with [3] some rice-washed-water (*kāṭi*) until it turns soft, and make a paste of the fruit along with its contents. If the paste is applied on affected part, swelling caused by the venom of *maṇḍali* snake would be relieved quickly.” (*ummattikkā turanniṭṭu kuru pāti kaḷaññatil. kuṛaññonnuṇṇuppuṇṇiṭṭu kāṭi vīṭti vetumpuka. aracchu vīkkamuḷḷēṭattokkettottu puraṭṭukil. maṇḍalīviṣavīkkaññalellām pōymarayum drutaṁ.*)

to change the applied Dhattūra-paste often for keeping it wet at all times.

6.2. Note on the Treatments at the Initial Visit

At the first stage of the treatment, it was necessary to suppress the vitiations of *kapha* and *pitta doṣas* that had occurred at the affected area. For this purpose, generally, there are thought to be two methods of treatment. One is to give internal medicines which directly work on drawing vitiated *doṣas* from the affected area.¹⁹ The other method is to apply external medicines that help to bring forward ripening (*pacyamāna*) process of ulcer (*vraṇa*), and eventually to remove vitiated *doṣas* from the affected area.

In this case, considering that a certain time had passed after the onset and the ripening (*pacyamāna*) process of ulcer (*vraṇa*) had already started, the physician decided to apply the external medicine mainly intended to remove the vitiated *kapha* and *pitta doṣas* and, as a consequence, to relieve the itching sensation (*kaṇḍū*) and swelling (*śōpha*).

For this reason, the physician chose the external application of Dhattūra-paste. This paste is consisting of the following three ingredients.¹⁸

[1] *Dhattūra* (Lat.: *Datura metel* L.) fruit: This fruit is regarded to be effective for skin disorders (*tvagdoṣa*) in general.²⁰

[2] Rock salt (*saindhava*): All kinds of salt (*lavaṇa*) in general are regarded to have the quality of liquid (*viṣyandin*), which is expected to induce liquefac-

¹⁹This method is mainly adopted for the treatments of ulcer (*vraṇa cikitsā*). For ulcer (*vraṇa*) and its treatment, see CS Ci chap. 25; SS Sū chaps. 17-19, Ci chaps. 1-2; AHS Utt chaps. 25-26; AS Utt chaps. 29-31.

²⁰On *dhattūra*, DhN Karavīrādī-varga 7-8ab runs: “*Dhattūra* has pungent (*kaṭu*) taste and heat (*uṣṇa*), produces beauty [of complexion], removes pain of ulcer (*vraṇa*), gets over skin diseases including *kuṣṭha* when it is used as ointment or paste (*lepana*), overcomes fever, prevails against skin disorders (*tvagdoṣa*), intractable itching and fever, and is intoxicant.” (*dhattūrah kaṭur uṣṇaś ca kāntikārī vraṇārtinut. kuṣṭhāni hanti lepena prabhāveṇa jvaraṃ jayet. tvagdoṣakṛcchrakaṇḍūtijvarahārī bhramāvahah.*)

BhPr 1, Nighaṇṭubhāga, Guḍūcyādi-varga 86cd-87 runs: “*Dhattūra* provides intoxication, [good] complexion, digestive fire (*agni*) and *vāta*, removes fever and skin diseases including *kuṣṭha*, has astringent (*kaṣāya*), sweet (*madhu*) and bitter (*tikta*) in tastes, gets rid of lice and their eggs, is hot (*uṣṇa*) and heavy (*guru*) [in digestion], removes ulcer (*vraṇa*), *kapha*, itching (*kaṇḍū*), insects and poison.” (*dhattūro madavarṇāgnivātakṛj jvarakuṣṭhanut. kaṣāyo madhuras tikto yūkālīkṣāvināśakah. uṣṇo gurur vraṇaśleṣmakaṇḍūkṛmiviṣāpahah.*) For the traditional medical usage of *dhattūra*, see Kumar (2015).

tion (*srāvaṇa*) to *doṣas*.²¹

[3] Rice-washed-water (*taṇḍulajala* or *taṇḍulodaka*): A medium of the paste.²²

Dhattūra-paste was expected to speed up the ripening (*pacyamāna*) and suppurating processes of ulcer (*vraṇa*), and to make vitiated *doṣas* and waste materials (*malas*) drain out. Dhattūra-paste is, as described in the *Jyotsnikā*, applied for the treatment of a kind of snake-bite (*maṇḍali* snake-bite) in principle.²³ However, the physician expected that Dhattūra-paste would be also effective for this case, because some symptoms and predominant *doṣas* of *maṇḍali* snake-bite case were similar to those of this case.²⁴

On the external application of Dhattūra-paste, the physician advised to the patient to keep it in a moisture-containing condition at all times. The reason for this advice was as follows. The dried paste would bring about the qualities (*guṇas*) of dryness (*rūkṣa*) and coldness (*śīta*) to the skin. Once dryness (*rūkṣa*) and coldness (*śīta*) are induced, they might cause further vitiation of *kapha*. Subsequently, the vitiated *kapha* might make itching (*kaṇḍū*) worse in the skin.

²¹ For salts (*lavaṇa*) including rock salt (*saindhava*), AHS Sū 6.143cd-145ab = AS Sū 12.26-27 reads: “All [kinds of] salt (*lavaṇa*) are liquefiable (*viṣyandin*) and fine (*sūkṣma*), clear *malas* away mildly, get over *vāta*, stimulate digesting or ripening process, have [the qualities of] sharpness (*tīkṣṇa*) and heat (*uṣṇa*), [the effect of] satisfaction-yielding (*rocana*), provide *kapha* and *pitta*. Among [some kinds of] salts, rock salt (*saindhava*) is accompanied by sweet taste, produces sexual vigor, is good for the heart, removes three *doṣas*, is light [in digestion], not hot, good for vision and healthy, does not give burning [sensation], and stirs fire [of digestion].” (*viṣyandi lavaṇam sarvaṃ sūkṣmam sṛṣṭamalam mṛdu. vātagnam pāki tīkṣṇoṣṇam rocanam kaphapittakṛt. saindhvam tatra sasvādu vṛṣyam hṛdyam tridoṣanut. laghv anuṣṇam dṛśaḥ pathyam avidāhy agnidīpanam.*) See also CS Sū 27.300-04; SS Sū 46.313-14; BhPr 1, Nighaṇṭubhāga, Harītakyaḍi-varga 241; DhN Śatapuṣpādi-varga 25-27.

²² For *taṇḍulodaka*, BhPr 2, Bheṣajavidhāna-prakaraṇa 7 reads: “One should add broken rice of one *pala* to the water of eightfold quantity [of one *pala*]. The water [with broken rice] should be taken and used in every treatment.” (*kaṇḍitam* (or *khaṇḍitam*) *taṇḍulapalam jale 'ṣṭagūṇite kṣipet. bhāvayitvā jalam grāhyam deyam sarvatra karmasu.*)

²³ *Maṇḍali* is a kind of venomous snake. Its venom is mainly regarded to cause *pitta* disorders in the traditional medical texts. For the symptoms caused by *maṇḍali* snake-bite, see CS Ci 23.124, 128; SS Ka 4.37, 39, 5.7; AHS Utt 36.23-24 = AS Utt 41.65-66; the *Jyotsnikā*, *Maṇḍalīcīkṣā*.

²⁴ For diversion of the treatments of snake-bites to those of insect-bites, SS Ka 8.42ab reads: “The ones bitten by the insects that have strong poison should be treated just like [patients of] snake-bites.” (*daṣṭān ugraviṣaiḥ kīṭaiḥ sarpavat samupācaret.*)

Furthermore, the dryness (*rūkṣa*) and coldness (*śīta*) of the skin might also cause vitiation of *vāta*. Subsequently, the vitiated *vāta* might make swelling (*śopha*) worse.²⁵

6.3. Treatments at the Re-visit

At the second visit of the patient to the U*** clinic on 9th January 2009, the symptoms had been mildly reduced, but it seemed that the patient had not fully followed the physician's advice to keep the applied Dhattūra-paste remaining moist at all times. As a result, dryness (*rūkṣa*) was slightly observed at the suffering part of the skin.

Then, the physician instructed the patient: (1) To discontinue applying the Dhattūra-paste, and newly indicated the following two prescriptions. (2) To prepare Āragvadhādi-decoction (*Āragvadhādigaṇa-kaṣāya*)²⁶ with the physician's modification to the original prescription,²⁷ and to take it internally twice a day at morning and night. (3) To prepare Āragvadhādi-coconutoil-paste

²⁵ ŚDhS 3.11.2cd runs: "Wet [paste or ointment] removes disorder. [However,] if it is dried, it would vitiate the skin." (*ārdro vyādhiharaḥ sa syāc chuṣko dūṣayati cchavim.*)

²⁶ Āragvadhādi-decoction or *Āragvadhādigaṇa-kaṣāya* in AHS Sū 15.17-18 = AS Sū 16.9-10: "[1] āragvadhā, [2] indrayava, [3] pāṭali, [4] kākatiktā, [5] nimba, [6] amṛtā, [7] madhurasā, [8] sruvavr̥kṣa, [9] pāṭhā, [10] bhūnimba, [11] sairyaka, [12] paṭola, a pair of karañjas (*karañjayugma* = [13] *karañja* and [14] *pūṭikarañja*), [15] *saptacchadā*, [16] *agni* (or *citraka*), [17] *suṣavī*, [18] *phala* (or *madana*), [19] *bāṇa*, and [20] *ghoṇṭā*. [These twenty medicinal plants form a formula called] Āragvadhādi[-decoction]. [This formula] prevails against vomiting, skin diseases including *kuṣṭha*, poisoning and fever, also *kapha*, itching and urinary disorder (*prameha*), has cleaning effect for vitiated ulcer (*duṣṭavraṇa*)."
(*āragvadhendrayavapāṭalikākatiktānimbāmṛtāmādhurasāsrurvavr̥kṣapāṭhāḥ. bhūnimbasā iryakapaṭolakarañjayugmasaptacchadāgnisuṣavīphalabāṇaghonṭāḥ. āragvadhādir jayati cchardikuṣṭhaviṣajvarān. kaphaṃ kaṇḍūṃ pramehaṃ ca duṣṭavraṇaviśodhanaḥ.*) See also Appendix of this article. Cf. AFI Part I 53-54 (Āragvadhādi Kvātha Cūrṇa); SS Sū 38.6-7, Ci 1.79.

²⁷ The physician's modification to the original prescription of Āragvadhādi-decoction is as follows.

(1) To exclude three medicinal plants, i.e., [16] *agni* (or *citraka*), [18] *phala* (or *madana-phala*) and [19] *bāṇa* from the original formula.

(2) To add one medicinal plant, *śigru* (bark) to the original formula.

This modification to the original Āragvadhādi-decoction was introduced by the physician's grand-father and *guru*, Vaidya V*** S*** Nampūtiri (1917~2015). For the interview with Vaidya V*** S*** Nampūtiri, see Yamashita and Manohar (2008).

according to the physician's family tradition,²⁸ and to apply it externally on the suffering part.

6.4. Note on the Treatments at the Re-visit

At this stage, the physician noticed that most of the vitiated *doṣas* had been draining out as expected, and that the ulcer (*vraṇa*) had come to almost the ripened (*pakva*) stage by visual examination and palpation. Then, the physician considered that if the ripening (*pacyamāna*) process still continued by applying the previously prescribed Dhattūra-paste in this situation, it would, in turn, make even the healthy bodily elements (*dhātus*) be caught up in the ripening (*pacyamāna*) process. Therefore, the physician instructed the patient: (1) To discontinue applying the Dhattūra-paste.

The physician newly indicated: (2) Internal use of Āragvadhādi-decoction, which is regarded to have a purifying effect (*śodhana*). The physician expected this decoction to remove the vitiated *kapha* and *pitta doṣas* thoroughly from the affected area, to restore the original state of bodily elements (*dhātus*) and, as a consequence, to heal the ulcer (*vraṇa*). However, among the original twenty ingredients of Āragvadhādi-decoction described in the texts (AHS Sū 15.17-18 = AS Sū 16.9-10),²⁶ three medicinal plants, i.e., *agni* (or *citraka*) *phala* (or *madana*) and *bāṇa*, are noted for the strong effect of heat (*uṣṇa*) in quality (*guṇa*). Considering that the venom (*viṣa*) which also has the quality (*guṇa*) of heat (*uṣṇa*)²⁹ was still remaining in the patient's body, the physician decided to remove these three medicinal plants from the original prescription of Āragvadhādi-decoction to avoid their excessive action of heat (*uṣṇa*). In place of the removed three ingredients, the physician added one ingredient, *śigru*

²⁸ Āragvadhādi-decoction and its directions by the physician, Vaidya B*** N***'s family (oral) tradition are as follows. (1) To pound the bark of *āragvadha* (Skt.: *āragvadha*, Mal.: *kaṇikkonna*, Lat.: *Cassia fistula* L.) . (2) To mix the pounded bark of *āragvadha* with appropriate quantities of coconut (Skt.: *nārikela vrkṣa*, Mal.: *nālikēraṁ*, Lat.: *Cocos nucifera* L.) oil. (3) To heat the mixture to suitable temperature and quench it. (4) To apply the paste once or twice in a day on the suffering part. (5) To keep the paste on the suffering part for half an hour and to wash it off.

²⁹ On the qualities (*guṇa*) of poison (*viṣa*) in general, AHS Utt 35.7cd-8ab reads: "Poison is sharp (*tīkṣṇa*), hot (*uṣṇa*), rough (*rūkṣa*), bright (*viśada*), pervading (*vyavāya*), going quickly (*āśukara*), light (*laghu*), shining (*vikāṣi*), subtle (*sūkṣman*), having indistinct taste (*avyaktarasa*), unripe (*apāki*) [in quality]." (*tīkṣṇoṣṇarūkṣaviśadam vyavāyāśukaram laghu. vikāṣi sūkṣmam avyaktarasam viṣam apāki ca.*) See also CS Ci 23.24-27; SS Ka 2.19cd-23; AS Utt 40.12.

bark³⁰ expecting it to reduce swelling (*śopha*) by its purifying effect (*śodhana*) for the channels (*srotas*) of the body.³¹

At this stage, it was necessary to restore a quality (*guṇa*) of viscousness (*snigdha*) opposing to dryness (*rūkṣa*) in the skin. On the other hand, it was necessary to avoid further vitiation of *kapha*, because *kapha* also has the quality (*guṇa*) of viscousness (*snigdha*).³² For this reason, the physician instructed (3) External application of Āragvadh bark-coconut oil-paste²⁸ expecting that this paste would work on mitigating *kapha doṣa*.³³

Oils in general have the quality (*guṇa*) of viscousness (*snigdha*). Among the various oils, sesame oil (*tilataila*)³⁴ is mostly used as the chief ingredient of medicated paste for external application. However, in this case, the qualities of heat (*uṣṇa*) and sharpness (*tīkṣṇa*) of sesame oil were supposed to work on aggravating the remaining poison (*viṣa*), because poison (*viṣa*) itself has the qualities of heat (*uṣṇa*) and sharpness (*tīkṣṇa*).²⁹ Therefore, the physician chose

³⁰ DhN Karavīrādi-varga 38 runs: “Śigru has bitter (*tikta*) and pungent (*kaṭu*) tastes and hot (*uṣṇa*) in quality, removes *kapha*, swelling (*śopha*) and *vāta*, eliminates insects, undigested substances (*āma*), poison and fat (*medas*), and prevails against abscess (*vidradhi*), disorder of spleen (*plīhan*) and visceral swelling (*gulma*).” (*śigrus tiktah kaṭus coṣṇah kaphaśophasamīrajit. kṛmyāmaṇiśamedoghno vidradhiplīhagulmanut.*)

³¹ This kind of modifications to the original prescriptions is approved in the traditional texts. For example, ŚDhS 1.1.54 runs: “Intellectual [physician] should remove ingredients which are inappropriate for the disease [from the prescription], even if they are mentioned in the prescription; and should add appropriate ones, even if they are not mentioned [in the prescription].” (*vyādher ayuktaṃ yad dravyaṃ gaṇoktam api tat tyajet. anuktaṃ api yad yuktaṃ yojayet tatra tad budhaḥ.*) See also CS Vi 8.149; SS Ci 1.137; AHS Sū 15.46; AS Sū 16.40. Cf. AHS Ka 6.1.1cd-12; AS Ka 8.14-15.

³² For example, CS Vi 8.96 reads: “*Kapha* (*śleṣman*) is viscous (*snigdha*), smooth (*ślakṣṇa*), soft (*mṛdu*), sweet (*madhura*), firm (*sāra*), viscid (*sāndra*), gentle (*manda*), moist (*stimita*), heavy (*guru*), cold (*śīta*), slimy (*vijjala*), and clear (*accha*) [in quality] ...” (*śleṣmā hi snigdhaślakṣṇamṛdumadhurasārasāndramandastimitaguruśītavijjalācchaḥ. ...*)

³³ On āragvadhā, DhN Gudūcyādi-varga 216 runs: “Āragvadhā is bitter (*tikta*) in taste, heavy (*guru*) and hot (*uṣṇa*) [in quality], expels insects, blocks acute pain, gets over *kapha*, abdominal swelling (*udara*) and urinary disorder (*prameha*), breaks down intractable visceral swelling (*gulma*) and *tridoṣa*.” (*āragvadhō rase tikto gurūṣṇah kṛmiśūlanut. kaphodaraprimehaghnaḥ kṛcchragulmatridoṣajit.*) Āragvadhā is regarded as one of the ten medicines of skin diseases including *kuṣṭha* in CS Sū 4.11. See also BhPr 1, Nighaṇṭubhāga, Harītakyaḍi-varga 148-150.

³⁴ For sesame oil (*tila taila*), see CS Sū 27.30; SS Sū 45.112-13; AHS Sū 5.55-56; AS Sū 94-96.

coconut oil instead of sesame oil for this prescription, because coconut oil is regarded to have a cooling effect by its quality (*guṇa*) of coldness (*śīṭala*).³⁵

7. Results

The authors of this article contacted the patient by telephone on 22nd February 2010 to enquire about the results of the treatments. The patient reported a complete recovery by the end of January 2009. However, she had continued to have Āragvadhādi-decoction and apply Āragvadhādi-coconutoil-paste for another two months, because the patient still had slight swelling and pain in the ankle joints, and a slight feeling of hot and reddening on her left leg. This case had a good outcome as expected.

8. Summary

- In the diagnosis, the physician first paid closer attention to what *doṣas* are involved in the disorders, and how they are involved in them, and then tried to understand the correlations among the *doṣas*, *dhātus*, other bodily elements and exogenous elements.
- In the treatments, the physician selected the treatment methods and drugs in accord with his view of the correlations among the *doṣas*, *dhātus*, other bodily elements and exogenous elements.
- For the selection of drugs, the physician considered carefully the effects and mutual influence of the qualities (*guṇas*) of each drug, its ingredient and exogenous element in the patient's body.
- The physician mainly followed the traditional medical theory and instructions found in the traditional medical texts in Sanskrit and Malayalam. Furthermore, considering the condition of patient, the physician adopted the treatment method handed down by his family tradition.
- The physician made some modifications to the original prescription described in the traditional medical texts as necessary for the management of

³⁵ SS Sū 46.180 reads: "Coconut is heavy (*guru*) and viscous (*snigdha*), gets over *pitta*, is sweet (*svādu*) and cold (*śīṭala*), gives strength and flesh, is good for the heart, fattens the body, and cleans the bladder." (*nārikeram guru snigdham pittaghnam svādu śīṭalam. balamāṃsapradam hṛdyam bṛṃhaṇam vastiśodhanam.*) See also AHS Sū 6.140 (additional verse) = AS Sū 7.173. For the usage of oil in the treatments of spider-bite, see AHS Utt 37.81 = AS Utt 44.91.

patient's symptoms. This kind of modification to the original prescription has been approved by the traditional medical texts.³¹

9. Appendix

List of the medicinal plants used in Āragvadhādi-decoction (*Āragvadhādigāṇa-kaṣāya*) modified by the physician for this case in Kerala.^{26, 27, 36}

[No.] Skt.: Sanskrit name, Mal.: Malayalam name, Lat.: Latin scientific name, Parts: Utilized parts

- [1] Skt.: *āragvadha*, Mal.: *kaṇikkonna*, Lat.: *Cassia fistula* L., Parts: bark
- [2] Skt.: *indrayava* (seeds of *kuṭaja*), Mal.: *kuṭakkappāla*, Lat.: *Holarrhena pubescens* Wall., Parts: seeds
- [3] Skt.: *pāṭali* (syn.: *pāṭalā*), Mal.: *pūppātiri*, Lat.: *Stereospermum colais* (Buch.-Ham. ex Dillwyn) Mabb., Parts: root
- [4] Skt.: *kākatiktā*,³⁷ Mal.: *kākkattoṇṭi*, Lat.: *Trichosanthes tricuspidata* Lour., Parts: root
- [5] Skt.: *nimba*, Mal.: *vēppū*, Lat.: *Azadirachta indica* A. Juss., Parts: bark
- [6] Skt.: *amṛtā* (syn.: *guḍūcī*), Mal.: *cirramṛtū mori kaḷaññū*, Lat.: *Tinospora sinensis* (Lour.) Merr. (syn.: *Tinospora cordifolia* (Willd.) Miers), Parts: stem removed of flaky bark
- [7] Skt.: *madhurasā*,³⁸ Mal.: *peruṅkurumpa*, Lat.: *Chonemorpha fragrans* (Moon) Alston (syn.: *Chonemorpha macrophylla* G. Don), Parts: root
- [8] Skt.: *sruvavṛkṣa*,³⁹ Mal.: *plāśū*, Lat.: *Butea monosperma* (Lam.) Taub.

³⁶The authors of this article purchased the samples of each ingredient of Āragvadhādi-decoction (*Āragvadhādigāṇa-kaṣāya* in AHS Sū 15.17-18 = AS Sū 16.9-10) and *śigru* at a store (N*** N***) of natural medicines in Kozhikode, Kerala on 10th January 2009 and listed them here. The Sanskrit, Malayalam and Latin scientific names of the items in this list were identified by Madhu K. Parameswaran mainly based on IMP, GVDB and The Plant List (2013).

³⁷IMP (Vol. 5, 328) identifies *kākanāsā* (Skt.) and *dhvāmṛkṣanāsā* (Skt.) as *Trichosanthes tricuspidata* Lour.; GVDB (86) indicates *kākādanī* and *śārṅgeṣṭā* as Skt. syn. of *kākatiktā*.

³⁸IMP (Vol. 2, 67) identifies *mūrvā* (Skt.) and *moraṭā* (Skt.) as *Chonemorpha fragrans* (Moon) Alston. See BhPr 1, Nighaṇṭubhāga, Guḍūcyādi-varga 244-45. GVDB (294) indicates *madhusravā* and *mūrvā* as Skt. syn. of *madhurasā*.

³⁹IMP (Vol. 3, 46) identifies *sruvavṛkṣa* as Skt. syn. of *vikaṅkata* and *Flacourtia jangomas* Rausch.; GVDB (367 and 461) identifies *sruvavṛkṣa* as Skt. syn. of *vikaṅkata* and *Flacourtia indica* Merr., syn.: *Flacourtia ramontchi* L' Herit.; IMP (Vol. 1, 284) and GVDB

- (syn.: *Butea frondosa* Roxb.), Parts: bark
- [9] Skt.: *pāṭhā*, Mal.: *pāṭakkilānñū*, Lat.: *Cyclea peltata* (Lam.) Hook.f. & Thomson (syn.: *Cyclea burmanni* Arn. ex Wight), Parts: rhizome
- [10] Skt.: *bhūnimba*, Mal.: *kiriyaṭṭū*, Lat.: *Andrographis paniculata* (Burm.f.) Nees, Parts: five parts (*pañcāṅga*), i.e., root, stem, leaf, flower and fruit
- [11] Skt.: *sairyaka* (syn.: *sahacara*),⁴⁰ Mal.: *karīṅkurīññi*, Lat.: *Nilgiranthus ciliatus* (Nees) Bremek. (syn.?: *Strobilanthes ciliatus* Nees), Parts: root
- [12] Skt.: *paṭola* (syn.: *paṭolā*), Mal.: *kayapan paṭavala vaḷḷi*, Lat.: *Trichosanthes lobata* Roxb., Parts: stem
- [13] Skt.: *karañja*, Mal.: *uññū*, Lat.: *Pongamia pinnata* (L.) Pierre (syn.: *Pongamia glabra* Vent.), Parts: bark
- [14] Skt.: *pūṭikarañja* (syn.: *cirabilva*), Mal.: *āvil*, Lat.: *Holoptelea integrifolia* Planch., Parts: bark
- [15] Skt.: *saptacchadā* (syn.: *saptachada*, *saptapaṇa*), Mal.: *ēḷilampāla*, Lat.: *Alstonia scholaris* (L.) R.Br., Parts: bark
- [16] (excluded for this case) Skt.: *agni* (syn.: *citraka*),⁴¹ Mal.: *koṭuvēlikkilānñū*, Lat.: *Plumbago indica* L. (syn.: *Plumbago rosea* L.), Parts: root
- [17] Skt.: *suṣāvī*, Mal.: *pullāni*, Lat.: *Getonia floribunda* Roxb. (syn.: *Calycotermis floribunda* (Roxb.) Lam. ex Poir.), Parts: bark
- [18] (excluded for this case) Skt.: *phala* (syn.: *madana*),⁴² Mal.: *madanaphala* (syn.: *malāṅkāra*, *kāraccuḷḷi*), Lat.: *Catunaregam spinosa* (Thunb.) Tirveng. (syn.: *Xeromphis spinosa* (Thunb.) Keay), Parts: fruit
- [19] (excluded for this case) Skt.: *bāṇa*, Mal.: *pāṇa*, Lat.: *Tephrosia purpurea* (L.) Pers., Parts: root
- [20] Skt.: *ghoṇṭā*,⁴³ Mal.: *koṭṭam*, Lat.: *Saussurea costus* (Falc.) Lipsch. (syn.: *Saussurea lappa* (Decne.) Sch.Bip.), or Mal.: *kaññikoṭṭam*, Lat.: *Bridelia stipularis* (L.) Blume, Parts: bark (or root)
- [21] (added for this case) Skt.: *śigru*, Mal.: *murīṇṇa*, Lat.: *Moringa oleifera* Lam., Parts: bark

(241) identify *Butea monosperma* (Lam.) Taub. as *palāśa* (Skt.)

⁴⁰GVDB (444-49) identifies *sairyaka* as one of Skt. syn. of *śaireya(ka)*.

⁴¹IMP (Vol. 4, 321) identifies *citraka* (Skt.) and *dahana* (Skt.) as *Plumbago indica* L.; GVDB (4 and 156) indicates *agnika* and *citraka* as Skt. syn. of *agni*.

⁴²IMP (Vol. 2, 33) indicates *madana* as *Catunaregam spinosa* (Thunb.) Tirvengadam; GVDB (266 and 291) indicates *madana* as Skt. syn. of *phala* and *Randia dumetorum* Lam.

⁴³IMP (Vol. 5, 80) indicates *kuṣṭha* (Skt.) as *Saussurea lappa* C.B. Clarke; GVDB (149) identifies *ghoṇṭā* (Skt.) and *ghoṇṭāphala* (Skt.) as *Zizyphus xylopyra* Willd. (*Zizyphus xylopyrus* (Retz.) Willd.). *Ghoṇṭā* (Skt.) is often identified as *Bridelia stipularis* (L.) Blume by native physicians of *Āyurveda* in Kerala for treatments of skin disorders.

10. Abbreviations

- AFI: *The Ayurvedic Formulary of India* → Department of Indian Systems of Medicine and Homoeopathy (2003)
- AHS: *Aṣṭāṅgaḥṛdayasaṃhitā*
- AS: *Aṣṭāṅgasamgraha*
- BhPr: *Bhāvaprakāśa*
- CS: *Carakasamhitā*
- Ci: *Cikitsāsthāna* or *Cikitsasthāna*
- DhN: *Dhanvantarinighaṇṭu* or *Dhanvantarīyanighaṇṭu*
- GVDB: *Glossary of Vegetable Drugs in Brhatrayā* → Singh and Chuneekar (1999)
- HIML: *A History of Indian Medical Literature* → Meulenbeld (1999-02)
- IMP: *Indian Medicinal Plants* → Arya Vaidya Sala (1993-96).
- Ka: *Kalpasthāna* or *Kalpasiddhisthāna*
- Lat.: Latin or Scientific Latin name
- MN: *Mādhavanidāna*
- Mal.: Malayalam (Malayāḷam)
- Ni: *Nidānasthāna*
- ŚDhS: *Śārṅgadharasaṃhitā*
- Skt.: Sanskrit
- SS: *Suśrutasaṃhitā*
- Sū: *Sūtrasthāna*
- syn.: synonym or synonyms
- Utt: *Uttarasthāna* or *Uttaratantra*
- Vi: *Vimānasthāna*

11. Bibliography

11.1. Sanskrit, Malayalam and Latin Texts

- AHS: *Aṣṭāṅgaḥṛdayam (The Core of Octopartite Āyurveda). Composed by Vāgbhaṭa with the Commentaries (Sarvāṅgasundarā) of Aruṇadatta and (Āyurvedarasāyana) of Hemādri.* Collated by Aṇṇa Moreśwara Kuṇṭe and Kṛṣṇa Rāmchandra Śāstrī Navare. Edited by Bhiṣagāchārya Hariśāstrī Parāḍakara Vaidya. Introduction by P.V. Sharma. Jaikrishna-das Ayurveda Series 52. 7th ed. Varanasi and Delhi: Chaukhambha Orientalia, 1982. Original edition, Bombay: Nirṇaya Sāgar Press, 1939.
- AS: *Vṛddhavāgbhaṭa, Aṣṭāṅgasamgrahaḥ Induvyākhyāsahitaḥ.* Sampāḍakaḥ: Ananta Dāmodara Āṭhavaḷe. Puṇe, 1980.

- BhPr: *Bhāvaprakāśa of Śrī Bhava Miśra including Nigaṇṭu Portion*. Edited with the ‘Vidyotini’ Hindi Commentary, Notes and Appendix by Śrī Brahmasaṅkara Miśra and Śrī Rūpalālaī Vaiśya (Specialist in Botany). Kashi Sanskrit Series 130. Part I. 10th ed. Varanasi: Chaukhambha Sanskrit Sansthan, 2002. Part II. 9th ed. 2005.
- CS: *The Charakasamhitā of Agniveśa revised by Charaka and Dṛiḍhabala with the Āyurveda-Dīpikā Commentary of Chakrapāṇidatta*. Edited by Vaidya Jādavaji Trikamji Āchārya. 4th ed. New Delhi: Munshiram Manoharlal, 1981. Original edition, Bombay: Nirṇaya Sāgar Press, 1941.
- De Medicina* (Lat.): Celsus, *On Medicine* with an English Translation by W. G. Spencer. 3 vols. Loeb Classical Library 292. Cambridge: Harvard University Press and London: William Heinemann, Reprint edition, 1953, First edition, 1935.
- DhN: *Dhanvantarinighaṇṭuḥ*. Edited by Priya Vrat Sharma. Translated by Guru Prasad Sharma. Jaikrishnadas Ayurveda Series 40. Varanasi and Delhi: Chaukhambha Orientalia, 1982.
- Jyotsnikā* (Mal.): *Jyōtsnikā, Viśavaidyam*. Śrīrāmavarmmagranthāvali. 2nd ed. Ernakulam: Azad Printers, 1124 (A.D. 1948).
- MN: *Mādhavanidāna by Mādhavakara with the Commentary, Madhukośa by Vijayarakṣita & Śrīkaṇṭadatta and with Extractions from Ātaṅkadarpaṇa by Vācaspati Vaidya*. Edited by Vaidya Jādavji Tricumji Āchārya. Jaikrishnadas Ayurveda Series 68. Varanasi and Delhi: Chaukhambha Orientalia, 1986.
- ŚDhS: *The Śārṅgadhara-Samhitā By Paṇḍita Śārṅgadharaāchārya Son of Pandita Damodara with the Commentaries Adhamallaś‘Dipika’ and Kashiramaś‘Gudhartha-Dipika’*. Edited with Foot-Notes by Parashuram Shastri Vidyasagar. Foreword Guruprasad Sharma. Krishnadas Ayurveda Series 14. Varanasi: Krishnadas Academy, 1986.
- SS: *Suśrutasaṃhitā of Suśruta, with the Nibandhasaṅgraha Commentary of Śrī Ḍalhaṇāchārya and the Nyāyacandrikā Pañjikā of Śrī Gayadāsāchārya on Nidānasthāna*. Edited by Vaidya Jādavji Trikamji Āchārya and Nārāyaṇ Rām Āchārya. Introduction by P.V. Sharma. 5th ed. Varanasi and Delhi: Chaukhambha Orientalia, 1992. Original edition, Bombay: Nirṇaya Sāgar Press, 1938.

11.2. Secondary Sources

- Andronov, Michail S. 1996. *A Grammar of the Malayalam Language in Historical Treatment*. Wiesbaden: Harrassowitz.
- Arya Vaidya Sala, Vaidyaratnam P S Varier’s, Kottakal. 1993-96. *Indian Medicinal Plants, A Compendium of 500 Species*. (IMP) 5 vols. Madras: Orient Longman.
- Department of Indian Systems of Medicine and Homoeopathy, Ministry of Health and Family Welfare, Government of India. 2003. *The Ayurvedic Formulary of India*. (AFI) Part I. 2nd rev. Eng. ed. Delhi: The Controller of Publications.

- Isbister, Geoffrey K. 2002. "Acute Allergic Reaction Following Contact with a Spider." *Toxicology* 40.10 (October): 1495-97.
- Isbister, Geoffrey K., and Hui Wen Fan. 2011. "Spider Bite." *The Lancet* 378.9808: 2039-47 (10th December 2011, Published online: 14th July 2011) <[http://dx.doi.org/10.1016/S0140-6736\(10\)62230-1](http://dx.doi.org/10.1016/S0140-6736(10)62230-1)> (accessed on 17th December 2015).
- Jamison, Stephanie W. 1986. "Brāhmaṇa Syllable Counting, Vedic *tvác* 'skin', and the Sanskrit Expression of the Canonical Creature." *Indo-Iranian Journal* 29: 161-181.
- Kumar, Balne Vijay. 2015. "Review Article on Dhatura (*Dhatura metel*, Linn)." *International Journal of Recent Advances in Multidisciplinary Research*. 2.2 (February): 240-243. Published on the Internet: <<http://www.ijramr.com/sites/default/files/issues-pdf/123.pdf>> (accessed on 28th September 2015).
- Mehra, Raakhee. 2005. *Vraṇa and Its Healing*. Kashi Ayurveda Series 60. Delhi: Chaukhamba Orientalia.
- Meulenbeld, G. J. 1999-02. *A History of Indian Medical Literature*. (HIML) 5 vols. (IA, IB, IIA, IIB, III). Groningen: Egbert Forsten.
- Rocha E Silva, M. 1978. "A Brief Survey of the History of Inflammation." *Agents and Actions* 8.1-2 (1978 Jan): 45-49.
- Singh, Thakur Balwant, and K.G. Chuneekar. 1999. *Glossary of Vegetable Drugs in Brhatrayāṇī*. (GVDB) Foreword by Shiv Sharma. 2nd ed. Varanasi: Chaukhamba Amarabharati Prakashan.
- The Plant List. 2013. Version 1.1. Published on the Internet: <<http://www.theplantlist.org/>> (accessed on 29th October 2015).
- Yamashita, Tsutomu, and P. Ram Manohar. 2008. "Memoirs of Vaidyas, The Lives and Practices of Traditional Medical Doctors in Kerala, India (1)." *eJournal of Indian Medicine* 1.2: 43-60.
- Yamashita, Tsutomu, Brahmadathan U.M.T., and Madhu K. Parameswaran. 2010. "Traditional Poison-healing System in Kerala: an Overview." *eJournal of Indian Medicine* 3.3: 101-17.
- Warier, Panditharajan Trikkovil Achyutha. 2006. *Ayurvedic Clinical Research*. Part I and II. Palakad: P.A. Ravindran.