

“DASHĀNGALĒPAYA” (AN AYURVEDIC MEDICINAL PASTE) FOR THE MANAGEMENT OF OSTEOARTHRITIS: A CASE STUDY

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ABSTRACT

Sandhigatha vātha which can be correlated with Osteoarthritis (OA) is a common disease in adult population. Pain, swelling, stiffness, reduced range of movement are the main signs and symptoms of OA and accumulation of fluids around joints cause swelling. Nowadays people seek relief from alternative medical systems like Ayurveda which uses herbal medicines in treating diseases. *Dashāngalēpayā* (DL) is a poly-herbal Ayurveda paste (*Lēpa*) which is used as a poultice externally. DL contains ten drugs including *Albizia lebbek* L., *Glycyrrhiza glabra* L., *Pterocarpus santalinus* L., *Valeriana wallichii* L., *Cinnamomum verum* L., *Nardostachys jatamansi* DC., *Curcuma longa* L., *Berberis aristata* DC., *Saussurea lappa* Falc. and *Vetiveria*

zizanioides L. TLC was performed to identify the chemical nature of *Dashāngalēpayā* and case study was conducted to analyze therapeutic effect of DL in management of OA. *Vruhath Nigantu Rathnākara* mentions *Shōthahara* property (reduction of swelling) of DL in skin diseases when applied with ghee. *Ushna veerya* (hot potency) helps in reducing pain by alleviating *Vātha dōsha*. *Thiktha rasa* (bitter taste), *Laghu, Rūksha guna* (light, rough qualities) help in reducing swelling by pacifying *Kapha dōsha*. DL is practically used as *Upanāha svēda* (poultice) for swollen joints by mixing with juice of *Tamarindus indica* L. leaves and heating in moderate heat. Patient was advised to apply DL on affected right ankle joint for a month twice a day and examined weekly. At the end of one month, patient showed reduced pain and swelling of the affected joint area. Randomized control trials and analysis of active metabolites of DL can be conducted in future.

KEYWORDS: *Dashāngalēpaya*, Osteoarthritis, Poultice, Swelling, TLC.

INTRODUCTION

Ayurveda is an Indian philosophy that mainly focuses on maintaining good health by balancing physical, mental and spiritual aspect in order to treat and get prevented from diseases.^[1] This is a field of medicine that deals with harmonizing the body with nature through herbal medicines, diet, behaviors, habits such as exercises, meditation and yoga practices. Nowadays there's more attention towards treating diseases with this important and valuable branch of holistic medicine throughout the world. Osteoarthritis (OA) is a common disease condition with gradual onset that occurs with aging and more prevalent in modern society.^[2] Lower back, hands, neck, weight-bearing joints such as hips, knees, ankles, feet are mostly affected and patients complain about pain, stiffness, swelling, reduced range of movement of joints and difficulty in doing day today work. These symptoms get worsen with time. OA in ankle joints have increased in past years and previous injuries to ankle joint, unhealthy food patterns, weight gain, repetitive/excessive usage of joints, family history of OA can be identified as the risk factors.

There are different treatment modalities for Osteoarthritis in Allopathic system of medicine and analgesics are mainly used in order to relieve pain. Cortisone injections are given in advanced symptoms of the patient. Re-aligning joints and joint replacement procedures are used in later stages of disease.^[3] This can become severe enough to make daily tasks difficult and sometimes may lead to immobilized stage because of pain and loss of balance during walking. Proper examination and radiological investigations like X-rays (AP/Lateral views) can be used in proper diagnosis of this disease. Prevalence of symptomatic Osteoarthritis is approximately 10% in men and 13% in women.^[3] According to latest research findings, almost 14% of Sri Lankan community has affected by chronic musculoskeletal ankle disorders. The majority were due to a previous ankle injury and Arthritis.^[4]

OA mentioned in Allopathic medicine can be correlated with *Sandhigatha vātha* disease in Ayurveda. This is a disease with *Vātha* origin and mainly affects the *Sandhi* (joints) of body. This is classified as one of the 80 diseases of *Vātha* origin in Ayurveda.^[5] This disease is said to be cured if treated in initial stage and cannot be cured rather than controlling in later stages. *Snēha* (oleation), *Svēda* (sudation), *Deepana*, *Pāchana aushada* (internal medicines with digestive property to normalize *Agni*) such as *Kashāya* (decoctions), *Guli/Vatī* (pills), *Kalka* (pastes), *Chūrna* (powders) are used to alleviate vitiated *Vātha dosha*. *Panchakarma*

treatments like *Vasthi* (enema therapy), *Virechana* (purgation) and *Nasya* (errhine therapy) can also be applied to control and treat this disease. Application of *Upanāha svēda* (mild hot poultice) is significant in the treatment protocol of *Sandhigatha vātha*.

Dashāngalēpaya^[6] is a poly herbal Ayurvedic formulation mentioned in authentic texts as an external application with ghee for skin disorders. Practically this drug is used to treat *Sandhigatha vātha* as a mild warm poultice. *Dashāngalēpaya* (DL) has shown successful effects on reducing swelling and pain of affected joints. Even though these measures are beneficial and effective, they are time consuming and takes a long time in preparation. Nowadays this drug formulation can be found in powder form which can be prepared as a paste by mixing with prescribed solution and applied on the affected area. The solution that is used to make the DL poultice depends on the affected *Dōsha* and physical constituents (*Prakruthi*) of patient. This should be well concerned and otherwise there may be allergic reactions to the patient. Internal treatments like *kashāya* (decoctions), *guli* (pills), *kalka* (pastes), external treatments like *snēha* (oleation), *svēda* (sudation), *lēpa* (application of medicinal pastes) depending on patient's body constitution and disease condition can help in relieving symptoms while controlling the progression of the disease.

JUSTIFICATION

As this is a self-limiting degenerative disease which progress with aging and it's essential to find an effective and a reliable method to cure and relieve the pain. With the increased amount of side effects, people tend to refuse allopathic treatments for diseases like OA and seek other alternative medicines. As a result, patients wish to get both internal and external Ayurvedic treatments and special priority is towards external treatments like pastes, oils etc. *Dashāngalēpaya* is one of the commonly used external treatments for *Sandhigatha vātha* (OA) in Ayurveda due to the therapeutic efficacy seen practically.

OBJECTIVES: General objective was to analyze the therapeutic efficacy of *Dashāngalēpaya* in the management of *Sandhigatha vātha* (OA). Specific objectives were to identify the Ayurveda pharmacological properties (*Rasādi panchakaya*) of ingredients of *Dashāngalēpaya* and to determine the presence of expected chemical composition of *Dashāngalēpaya* in TLC analysis.

MATERIALS AND METHODS

Research was conducted by literature study, TLC to standardize the DL paste and case study to analyze the therapeutic effect of *Dashāngalēpaya* (DL) in the management of *Sandhigatha vātha* (OA).

Literature study – was conducted with reference to Ayurveda authentic texts such as *Vridhdhatraya* (*Charaka Samhithā*, *Susrutha Samhithā*, *Ashtāngahrdaya Samhithā*), *Laghutraya* (*Mādhava Nidāna*, *Shārangadhara Samhithā*, *Bhāva Prakāsha*), *Vruhat Nigantu Rathnākara*, *Ashtānga Sangraha*, *Bhaisajya Rathnāvali*, *Ayurveda Aushadha Sangrahaya* (Ayurveda Pharmacopoeia - vol 1,2,3), *Ayurveda Sameekshāwa*, Modern medical books and scientific research articles published on internet.

Preparation of *Dashāngalēpaya* (DL) - Drug formula of *Dashāngalēpaya* was collected from *Ayurveda Aushadha Sangrahaya* (Ayurveda Pharmacopoeia - vol 1) and 100g of powder of each of the ten ingredients were collected and used in the preparation of the paste. Ingredients of the preparation were, *Albizia lebbek* L., *Glycyrrhiza glabra* L., *Pterocarpus santalinus* L., *Valeriana wallichii* L., *Cinnamomum verum* L., *Nardostachys jatamansi* DC., *Curcuma longa* L., *Berberis aristata* DC., *Saussurea lappa* Falc. and *Vetiveria zizanioides* L. juice of *Tamarindus indica* L. leaves were used in mixing the powder and heated in *Madhya pāka* (moderate heat).

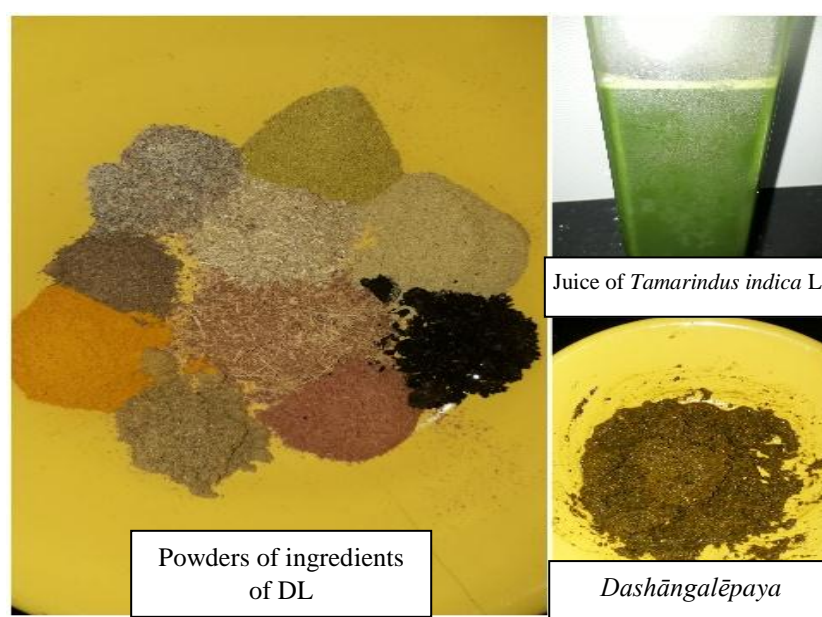


Figure 1: Ingredients and preparation of *Dashāngalēpaya* (DL).

Thin Layer Chromatography (TLC) was carried out to separate non-volatile mixtures and to identify compounds present in *Dashāngalēpaya* which will be used in the clinical study.

Case study - Conducted with a 61 years old patient attended to National Ayurveda Teaching Hospital (NATH) – Borella to take medicines for pain and swelling in right ankle joint experiencing for nearly 3 months with difficulty in walking. Patient had applied different balms to relieve pain time to time but had not gained a proper relief. As a result, she had visited to the NATH to get treatments for the ankle pain. After getting written consent by providing the information sheet, case study was conducted to analyze the therapeutic effect of *Dashāngalēpaya* in the management of *Sandhigatha-vātha* (OA).

No history of Diabetes, Hypertension or Cholesterol and no any drug or food allergies were reported. No any previous injury to the affected right ankle joint. Home-made food was mainly consumed and behaviour was normal with reduced exercises due to ankle pain. BMI was in normal range (20.2kgm^{-2}).

Table 1: Signs and symptoms before the treatment.

	Criteria used on Examination	Right Ankle Joint	Left Ankle Joint
1.	Circumference of the Ankle joint	26cm	23.5cm
2.	Swelling	+++	---
3.	Pitting Oedema	+++	---
4.	Pain	+++	---
5.	Tenderness	+++	---
6.	Range of movement of ankle joint (Approximated angle in degrees)		
	Flexion	10°	30°
	Extension	20°	40°
	Pronation	10°	30°
	Supination	20°	50°

On physical examination, *Nādi* (pulse) was 72bpm and no any abnormalities in urination [frequency D/N- 6-7/1-2], bowel moments [frequency D/N- 1-2/0, no hard stools]. *Jihvā* (tongue) was slightly coated (*Āma*), *Shabdha* (sound) slight crepitus was present in the right ankle joint on flexion and in *Sparsha pareekshā* (touch) pitting oedema was examined along with the reduction of range of movement in right ankle joint. In *Dashavidha pareekshā* (Tenfold examination), patient's *Prakruthi* (constitution) was *Vātha-Kapha*, *Āhāra shakthi* (digestive capacity) was normal with normal appetite and bowel moments without constipation or diarrhea. *Bala* (strength) was moderate to the *Vaya* (age) and *Vyāyāma*

shakthi (power of exercises) had reduced with the difficulty in walking with the right ankle joint pain. No any history of trauma to the right ankle joint was reported.



Figure 2: X-ray of the right and left ankle joints of the patient.

By the lateral view x-ray reports of both ankle joints, abnormality of the bony structures was visible. Left ankle joint was normal and the right ankle joint x-ray showed changes relevant to OA such as reduction of cartilage in between Tibia and Talus bones (Tibio-Talar joint). Pain and swelling of right ankle might have caused due to this.

Patient was advised to apply *Dashāngalēpaya* on the right ankle joint as an external mild warm poultice by mixing with juice of *Tamarindus indica* L. and heating in the moderate heat. She was advised to keep the right ankle joint area in mild warm water for 10 minutes. After wiping the leg with a towel advised to apply the prepared poultice on the right ankle joint and keep for 3 hours. This procedure was followed for a month and patient was examined weekly to evaluate the progress of the treatment.

She was asked to avoid heavy food like curd, jackfruit, breadfruit, bananas and advised to increase the intake of vegetables with reduced oil. Advised to take warm water frequently and avoid bathing in evening/night and advised to use hot water in washing the affected joint. On examination compared both ankles and measured the circumference of both ankle joints before and after the treatment weekly.



Figure 3: Application of *Dashāṅgalēpaya* (DL) to the right ankle joint of patient.

RESULTS

1. Literature analysis of *Sandhigatha vātha*, Osteoarthritis and *Dashāṅgalēpaya*

Osteoarthritis is characterized by progressive destruction of cartilage that lies in between bones. Mal-alignment of bones, deformities of surrounding muscles, tendons and ligaments increase the presenting complaints of patients. This degenerative disease gets worsen over time, resulting severe chronic pain and stiffness, pitting or non- pitting oedema, crepitus and reduced range of movement. OA of ankle joints is a common type of Osteoarthritis.

Ankle is a hinged synovial joint that is formed by the articulation of the talus, tibia and fibula bones. The articular facet of the lateral malleolus forms the lateral border of the ankle joint. Articular facet of medial malleolus forms the medial border of the joint. Superior portion of the ankle joint forms from the inferior articular surface of the tibia and the superior margin of the talus. Talus articulates inferiorly with the calcaneus and anteriorly with the navicular. The upper surface, called the trochlear surface, is cylindrical and allows for dorsiflexion and plantarflexion of the ankle. Talus is wider anteriorly and narrow posteriorly and it forms a wedge that fits between the medial and lateral malleoli making dorsiflexion, the most stable position for the ankle.^[7]

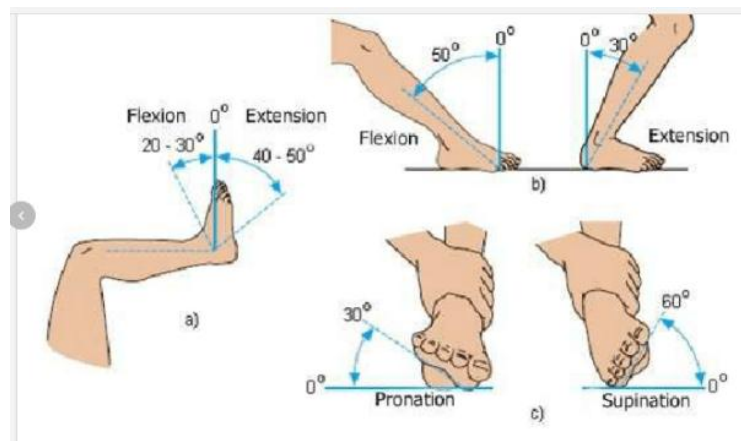


Figure 4: Movements of Ankle joint.^[8]

OA can be compared with *Sandhigatha vātha* in Ayurveda which is mentioned under *Vāthaja* diseases affecting *Asthi* (bones) and *Sandhi* (joints). Definition and pathogenesis of *Sandhigatha vātha* is mentioned in *Charaka samhithā chikithsā sthāna*.^[9] This says due to incompatible food and activities *Vātha* gets vitiated gradually and gets accumulated and further vitiation cause spreading of vitiated *dōshas* getting localized in *dhāthus* like *Asthi*, *Sandhi* (bones and cartilages) causing *Sandhi shūla* (joint pains), *Shōtha* (swelling) etc. Signs and symptoms of *Sandhigatha vātha* is mentioned in *Susrutha samhithā Nidāna sthāna*.^[10] According to this shloka, *Sandhigatha vātha* is said to cause pain, swelling and difficulty in extending and flexing the joints.

There are 80 *Vātha* origin diseases and *Sandhigatha vātha* is one of these which mainly affects the *Sandhi* (joints) of body. This disease is said to be curable if found in initial stage and cannot be cured rather than controlling in later stages. Treatment plan for *Sandhigatha vātha* is mentioned in *Yōgarathnākara*^[11] and it mentions *Abhyanga* (oleation), *Svēdana* (sudation), *Vasthi* (enema), *Nasya* (errhine therapy), *Snēha virēchana* (purgation), intake of *Snigdha* (oily), *Amla* (sour), *Lavana* (salty), *Madhura rasa* (sweet) food can be followed to reduce pathogenesis and relieve signs and symptoms of the disease.

Among these treatment modalities sudation plays an important role in pacifying vitiated *Vātha dōsha*. *Upanāha svēda* or application of mild hot poultices like *Dashāngalēpaya* is significant in treating *Sandhigatha vātha*. Ingestion of digestive drugs to normalize *Agni* (Digestive fire) should be given initially in the treatment and internal treatments like *Kashāya* (decoctions) *Guli* (pills), *Chūrna* (powders) and external treatments like *Lēpa/Paththu* (pastes), *Thaila* (oils) can also be used to treat *Sandhigatha vātha*.^[9] *Vruhath Nigantu*

Rathnākara mentions *Shōthahara* property (reduction of swelling) of DL in skin diseases when applied with ghee. *Albizia lebbbeck* L., *Glycyrrhiza glabra* L., *Pterocarpus santalinus* L., *Valeriana wallichii* L., *Cinnamomum verum* L., *Nardostachys jatamansi* DC., *Curcuma longa* L., *Berberis aristata* DC., *Saussurea lappa* Falc. and *Vetiveria zizanioides* L. are the ten ingredients of DL. *Rasādi panchakaya* (Pharmacological analysis) in Ayurveda is mentioned under five categories like *Rasa* (taste), *Guna* (quality), *Veerya* (potency), *Vipāka* (final digestive outcome) and *Prabhāva* (special potency)^[12] which helps to analyze the action of drugs in body.

By analyzing all the 10 ingredients of *Dashāngalēpaya* it was observed that many ingredients were prominent with *Thiktha rasa* (bitter taste), *Laghu, Rūksha guna* (light, rough qualities), *Ushna veerya* (hot potency) and *Katu vipāka* (pungent final digestive property) which helps in pacification of *Vātha dōsha* and *Kapha dōsha* that cause pain and swelling of joints respectively. DL is applied as *Upanāha svēda* (a mild warm poultice) and this also helps in reducing the joint pain.^[13] (70%) *Thiktha rasa* (bitter taste), (90%) *Laghu, Rūksha guna* (light, rough qualities) help in reducing swelling by pacifying *Kapha dōsha*.

Table 2: *Rasādi panchakaya* of *Dashāngalēpaya* ingredients.^[12]

Ingredient	<i>Rasa</i>	<i>Guna</i>	<i>Veerya</i>	<i>Vipāka</i>	<i>Prabhāva</i>
1. <i>Albizia lebbbeck</i> L. (Sheerisha/Mahari)	<i>Kashāya, Thiktha, Madhura</i>	<i>Laghu Ruksha, Theekshna</i>	<i>Ushna</i>	<i>Madhura</i>	-
2. <i>Glycyrrhiza glabra</i> L. (Yashti/Walmee)	<i>Madhura</i>	<i>Guru, Snigdha</i>	<i>Sheetha</i>	<i>Madhura</i>	-
3. <i>Valeriana wallichii</i> L., (Anatha/Thvarala)	<i>Katu, Thiktha, Kashāya</i>	<i>Laghu Snigdha</i>	<i>Ushna</i>	<i>Katu</i>	-
4. <i>Pterocarpus santalinus</i> L. (Chandana/Rath handun/ Red Sandalwood)	<i>Thiktha, Madhura,</i>	<i>Guru, Rūksha,</i>	<i>Sheetha</i>	<i>Katu</i>	-
5. <i>Cinnamomum verum</i> L. (<i>Ēlā /Enasahal/ Cardomom</i>)	<i>Katu, Madhura</i>	<i>Laghu, Rūksha,</i>	<i>Sheetha</i>	<i>Madhura</i>	-
6. <i>Nardostachys jatamansi</i> DC. (<i>Mānshi/Jatā mānsha</i>)	<i>Thiktha, Kashāya</i>	<i>Laghu, Snigdha, Theekshna,</i>	<i>Sheetha</i>	<i>Katu</i>	-
7. <i>Curcuma longa</i> L. (<i>Haridrā/Kaha/Turmeric</i>)	<i>Thiktha, Katu</i>	<i>Laghu, Rūksha</i>	<i>Ushna</i>	<i>Katu</i>	-
8. <i>Berberis aristata</i> DC. (<i>Dāru haridrā/wenivel/Yellow wine</i>)	<i>Katu</i>	<i>Laghu, Rūksha, Theekshna</i>	<i>Ushna</i>	<i>Katu</i>	-
9. <i>Saussurea lappa</i> Falc. (<i>kushta/suwandakottam</i>)	<i>Katu, Thiktha, Madhhura</i>	<i>Laghu, Rūksha, Theekshna,</i>	<i>Ushna</i>	<i>Katu</i>	-
10. <i>Vetiveria zizanioides</i> L. (<i>wāla/savandarā</i>)	<i>Thiktha, Madhura</i>	<i>Laghu, Rūksha</i>	<i>Sheetha</i>	<i>Katu</i>	-

By considering the effect of these 10 ingredients on body, it was cleared that most of these ingredients have *Thridōshahara* [ability to pacify all three *dōshas* (*vātha*, *pitta*, *kapha*)] and *Shōthahara* (reduce swelling) properties. When *Vātha dōsha* gets pacified, pain reduces, when *Pitta dōsha* gets pacified, burning sensation reduces and when *Kapha dōsha* gets reduced swelling and heaviness of joints along with stiffness reduces.

Table 3: Effect of ingredients on body.

Ingredient		Action on body
1.	<i>Albizia lebeck</i> (<i>Sheerisha/ Mahari</i>)	<i>Thridōshahara</i> (pacify all three <i>dōsha</i>), <i>Shōthahara</i> (reduce swelling), <i>Kushtaghna</i> (treat skin diseases)
2.	<i>Glycyrrhiza glabra</i> (<i>Yashti/ Valmee</i>)	<i>Vātha shamana</i> (pacify <i>vātha</i>)
3.	<i>Valeriana wallichii</i> L. (<i>Anatha/ Thvarala</i>)	<i>Thridōshahara</i> (pacify all three <i>dōshas</i>)
4.	<i>Pterocarpus santalinus</i> (<i>Chandana. Rath handun/ Red sandalwood</i>)	<i>Shōthahara</i> (reduce swelling)
5.	<i>Cinnamomum verum</i> (<i>Ēlā/Enasahal/ Cardamom</i>)	<i>Thridōshahara</i> (pacify all three <i>dōsha</i>)
6.	<i>Nardostachys jatamansi</i> (<i>Mānshi/Jatā mānsha</i>)	<i>Vāthaghna</i> (pacify <i>vātha</i>)
7.	<i>Curcuma longa</i> (<i>Haridrā/ Kaha/ Turmeric</i>)	<i>Kaphavātha shāmaka</i> (pacify <i>vātha</i> & <i>kapha</i>)
8.	<i>Berberis aristate</i> (<i>Dāru haridra/ Wenivel</i>)	<i>Vātha shamana</i> (pacify <i>vātha</i>)
9.	<i>Saussurea lappa</i> (<i>Kushta/ Suwandakottam</i>)	<i>Kaphavatha shāmaka</i> (pacify <i>vatha</i> & <i>kapha</i>)
10.	<i>Vetiveria zizanioides</i> (<i>Wāla/ Savandarā</i>)	<i>Pittha shāmaka</i> (pacify <i>pitta</i>)

2. Thin Layer Chromatography (TLC)

TLC was tested to check the presence of relevant constituents in the sample and it was cleared that the major chemical component of all the 10 ingredients and the solvent (*Tamarindus indica* L.) were present in the sample which was utilized in the case study.

TEST RESULTS**TLC Fingerprint**

No.	Parameters	Results	Test Method
1	<i>Berberis aristate</i> (Weniwel)	Positive	TLC Fingerprint
2	<i>Vetiveria zizanioides</i> (Sewandara)	Positive	
3	<i>Saussurea lappa</i> (Suwada kottan)	Positive	
4	<i>Pterocarpas santalinus</i> (Rath hadun)	Positive	
5	<i>Cucurma longa</i> (Kaha)	Positive	
6	<i>Elettaria cardumom</i> (Enasahal)	Positive	
7	<i>Albizia lebbbeck</i> (Mara)	Positive	
8	<i>Valeriana wallichii</i> (Thawarala)	Positive	
9	<i>Glycyrrhiza glabra</i> (Wel mee)	Positive	
10	<i>Nardostachys jutamamsi</i> (Jatamansha)	Positive	
11	<i>Tamarindus indica</i> (Siyambala juice)	Positive	

Figure 5: Results of TLC Fingerprinting of DL.**3. Results of case study**


Research was mainly carried out to analyze the therapeutic efficacy of *Dashāngalēpaya* in the management of *Sandhigatha vātha* (OA) and results were analyzed with reference to pathology, signs, symptoms, clinical manifestation of OA. Study was conducted for a month with DL as the external treatment.

T – Tenderness, CRA - Circumference of Right Ankle Joint

ROM - Range of movement, [Flexion (F), Extension (E), Pronation (P), Supination (S)]

[More - +++, Moderate - ++, Less - +, Absent – ---]

Table 4: Signs and symptoms of right ankle before and after the treatment.

Week	Pain	T	Swelling/ Pitting oedema	ROM F/E/P/S	CRA	Other complaints
1 st week						
	+++	+++	+++	All four rotations have reduced <15°	26cm	Slight itching when DL is applied, Heaviness of right ankle




2nd week 	++	++	+++	All four rotations have reduced $<15^{\circ}$	25.5cm	No itching after application of DL
3rd week 	+	++	++	All four rotations have reduced $<30^{\circ}$	25cm	Slight heaviness of right ankle
4th week 	---	+	Non-pitting oedema +	ROM of all four rotations have been increased $>30^{\circ}$	24cm Similar to the left side ankle circumference	No any other complaints and can walk easily

Table 5: Signs and symptoms before and after the treatment.

	Criteria used on Examination	Before Treatment		After Treatment	
		Right Ankle Joint	Left Ankle Joint	Right Ankle Joint	Left Ankle Joint
1.	Circumference of the Ankle joint	26cm	23.5cm	24cm	23.5cm
2.	Swelling	+++	---	+	---
3.	Pitting Oedema	+++	---	---	---
4.	Pain	+++	---	---	---
5.	Tenderness	+++	---	+	---
6.	Range of movement of ankle joint (Approximated angle in degrees)				
	Flexion	10°	30°	$<30^{\circ}$	30°
	Extension	15°	40°	30°	40°
	Pronation	10°	30°	$<15^{\circ}$	30°
	Supination	20°	50°	30°	50°



Figure 6: State of oedema at the end of 4 weeks (One month).

DISCUSSION

Sandhigatha vātha is a disease mentioned in Ayurveda with *Vāthaja* origin affecting bones and joints which can be compared with Osteoarthritis. Due to incompatible food and behaviours *Vātha dōsha* gradually gets vitiated and accumulated. Further vitiation cause spreading of vitiated *dōshas* and getting localized in *dhāthus* like *Asthi* (bones), *Sandhi* (cartilages) causing *Sandhi shūla* (joint pains) and *Shōtha* (swelling). Ankle joint is a hinged synovial joint that is formed by the articulation of the talus, tibia, and fibula bones. In the ankle, osteoarthritis could cause ligaments to become weaker, which could put more strain on the cartilage. This results in muscles around the ankle to become weaker over time and it may cause pain in moving the joint and walking.

Dashāngalēpayā^[6] is a poly herbal Ayurvedic formulation mentioned for external application and practically can be used for joint disorders like *Sandhigatha vātha* as a poultice. This has shown positive effects on reducing swelling and joint pain occurred due to OA. DL contains ten drugs including *Albizia lebbeck* L., *Glycyrrhiza glabra* L., *Pterocarpus santalinus* L., *Valeriana wallichii* L., *Cinnamomum verum* L., *Nardostachys jatamansi* DC., *Curcuma longa* L., *Berberis aristata* DC., *Saussurea lappa* Falc. and *Vetiveria zizanioides* L. *Vruhath Nigantu Rathnākara* mentions *Shōthahara* property (reduction of swelling) of this preparation. *Dashāngalēpayā* is a commonly used external treatment for patients suffering from joint disorders like OA.

TLC finger printing showed positive results for the presence of all ten ingredients and the *Tamarindus indica* L. which was used in the preparation of DL. As *Sandhigatha vātha* is a *Vāthaja* disease, treatments with *Ushna veerya* (hot potency) should be used. *Dashāngalēpaya* was prepared in *Madhya pāka* (moderate heat) and applied on the right ankle joint of the patient after sudation process using mild hot water and wiping well.

Most of the ingredients of DL had *Thridōshahara* [ability to pacify all three *dōshas* (*vātha*, *pitta*, *kapha*)] and *Shōthahara* (reduce swelling) properties. *Thiktha rasa* (bitter taste), *Laghu*, *Rūksha guna* (light, rough qualities) were prominent in DL which helps in pacifying vitiated *vātha* and *kapha dōsha* and giving relief to the patient.

CONCLUSION

Present study analyzed *Sandhigatha vātha* which can be compared with Osteoarthritis with reference to aetiology, pathogenesis, signs, symptoms in both Ayurveda and Allopathic medical systems. TLC fingerprinting confirmed the presence of the active chemical components of all ten ingredients along with *Tamarindus indica* L. which was used as the solvent to mix DL. Literature survey revealed that ingredients of *Dashāngalēpaya* has qualities of pacifying vitiated *Vātha dōsha* which causes pain in *Sandhigatha vātha* and reducing *Shōtha* (swelling) caused by *Kapha dōsha*. This was clearly proven by the positive therapeutic results observed after one month of treatment using the *Dashāngalēpaya* as an *Upanāha svēda* (a mild warm poultice) in the patient who was suffering from *Sandhigatha vātha* (OA) of right ankle joint for nearly three months.

RECOMMENDATIONS

Case series and randomized control trials can be conducted to evaluate the effectiveness of *Dashāngalēpaya* in patients with *Sandhigatha vātha* (Osteoarthritis). Laboratory tests can be utilized to identify the active components of this valuable medicine in future research.

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