Research Article

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EVALUATION OF THE SANDHISHOOLAHARA ACTION OF LAGHUVATAVIDHWANSAN RASA IN KNEE JOINT ARTHRITIS

Anuja Hari Gholap ^{1*}, Madhavi P. Mahajan ², B.B. Kadlaskar ³

¹P.G. Scholar, Department of Kayachikitsa, Bharati Vidyapeeth Deemed University College and Hospital of Ayurveda, Katraj-Dhankawadi, Pune, India

²Associate Professor, Department of Kayachikitsa, Bharati Vidyapeeth Deemed University College and Hospital of Ayurveda, Katraj-Dhankawadi, Pune, India

³Professor, Department of Kayachikitsa, Bharati Vidyapeeth Deemed University College and Hospital of Ayurveda, Katraj-Dhankawadi, Pune, India

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*Corresponding author

E-mail: dranujamd@gmail.com

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ABSTRACT

Knee joint is the most important joint in the body since it is a weight bearing joint. Diseases affecting knee joint are of importance though not fatal may cripple the life of the patient thereby hampering the quality of life. Pain is an important determinant of disability. NSAID'S mostly are used for pain relief but are liable to produce side effects. Hence, Laghuvatavidhwansan Rasa was selected for this clinical trial with approval from ethical committee. It being a herbo-mineral preparation was administered for a duration of 7 days. A total of 50 patients were selected for the study having knee joint pain as a prominent symptom irrespective of type of arthritis. Analgesic effect was observed after 4 hours of drug administration. Apart from symptom of crepitus, rest all symptoms like pain, swelling, functional ability, tenderness was found to have a significant effect. Pulse rate and blood pressure had no significant change suggesting that Laghuvatavidhwansan rasa is a non-toxic formulation. In a nutshell, it can be concluded that Laghuvatavidhwansan rasa is a potent analgesic and anti-inflammatory drug.

Keywords: Pain, shoola, knee joint, arthritis, Laghuvatavidhwansan Rasa

INTRODUCTION

Movements & associated motor functions are attributed to the five karmendriyas viz. Vak, Pani, Pada, Payu, Upastha.¹ Vata is a driving force to perform normal activities of karmendriyas. Sandhi plays a pivotal role in functioning of karmendriya especially pani, pada etc. A normal daily life without using karmendriyas is almost impossible for any human being. Sandhishoola is an important clinical manifestation seen in many diseases that afflicts the sandhi. The term shoola may be equated with pain. The diseases of the sandhi are becoming more and more common in these days due to the prevalent habits and lifestyle in present era.

Amavata, Sandhigata vata, Krostukshirsha, vatarakta, etc. are most troublesome diseases since pain is a prominent feature which affect the locomotor system in the most productive period of life. Hence, management of pain becomes priority of the physician. Even though sandhishoola is not proved to be fatal, it cripples the affected patients. It affects many spheres of the patients' life like family & community relations etc.

Musculoskeletal conditions are a vast group regarding pathophysiology but are linked anatomically and by their association with pain and impaired physical function. They include a vast range of conditions from acute onset and short duration to lifelong disorders including osteoarthritis, rheumatoid arthritis, osteoporosis and low back pain etc. The prevalence of many of these conditions increases with age and many are affected by lifestyle factors like obesity and lack of physical activity etc. It has been recognized by the United Nations & WHO, with their endorsement of Bone & Joint

decade 2000-2010 that²the increasing number of older people and the drastic changes in lifestyle throughout the world means that the MSD burden on people and society will increase dramatically.

A recent study of Rheumatic Musculoskeletal disorders conducted in the urban region of Pune, India, using the COPCORD Bhigwan model, found 14% prevalence of Musculoskeletal disorder³.

Pain is the most prominent and troublesome symptom in most people with arthritis. Pain is the body's message that something is wrong⁴. The intensity of pain suffered and reflection of that pain differs enormously from person to person⁵. Disease modifying drugs help in relieving pain but for immediate effect of analgesia analgesics and anti-inflammatory drugs are required.

Inflammation is part of the complex biological response of body tissues to harmful stimuli such as pathogens, damaged cells or irritants⁶, and is a protective response involving immune cells, blood vessels and molecular mediators. the function of inflammation is to eliminate the initial cause of cell injury, clear out necrotic cells and tissues damaged from the original insult and the inflammatory process and to initiate tissue repair. The classical signs of inflammation are calor, rubor, dolor, tumor, loss of function.

Inflammation of joint usually accompanied by pain, swelling and frequently changes in structure is c/a arthritis⁷. The term is Greek arthro-meaning joint and itis meaning inflammation.

Arthritis may result from or be associated with infection (gonococcal) tuberculous, pneumococcal) rheumatic fever, ulcerative colitis, trauma, neurogenic disturbances, degenerative joint disease, periarticular conditions. There are various types of arthritis like acute suppurative arthritis, allergic arthritis, bacterial arthritis, degenerative arthritis, gonococcal arthritis, gouty arthritis, hypertrophic arthritis, juvenile rheumatoid arthritis, syphilitic arthritis, tuberculous arthritis etc. The involvement of joints in arthritis may be mono or polyarticular. Knee joint is an important joint since it is a weight bearing joint of our body likewise in most arthritis knee joint involvement is commonly seen. If a person has trauma / injury / any pathological condition to the knee joint, he will experience difficulty in the knee joint movements as per level of severity and as pain increases the capacity of the joint to do mobility reduces and hence to help relieve such patients of knee joint arthritis from pain the present study was selected there by providing relief to the patient and hence helping in improving his quality of life.

Rasa Chandanshu has mentioned Laghuvatavidhwansan rasa in treatment of vataroga and hence was selected to reduce sandhishoola (Joint Pain)⁸.

Aim

To study the sandhishoolahara action of Laghuvatavidhwansan rasa in knee joint arthritis.

Objectives

- To study the effect of Laghuvatavidhwansan rasa in reducing other symptoms of knee joint arthritis like sandhi

shotha (swelling), sparsha asahatwa (Tenderness), sandhi atopa (Crepitus), Functional ability (mobility)

- To observe side effects of the drug if any during treatment.

MATERIALS AND METHODS

Drug Review

Laghuvatavidhwansan rasa has been mentioned in Rasa Chandanshu as a treatment for vataroga.

Drug - Laghuvatavidhwansan rasa

Prakshipya gandham rasa tulya bhagam kala pramanam cha visham samastat

Kkrushanutoyen cha bhavayitva vallam daditasya maruta prashantyai|| 318 ||

Apasmaretathonmade sarvangvyathane api cha

Deyo ayam valla matrastu sarva vata nivrutaye|| 319 ||

(Rasa Chandanshu 317 ½-319)

Drugs-Parad, Gandhak, Vatsanabh, Chitrak

Method of preparation

Steps in preparation of Laghuvatavidhwansan rasa

- The drug was procured from local market
- All drugs were powdered using pulveriser and the powder was sieved
- The powder property and angle of repose was noted
- Drugs were taken in equal quantity and bhavana of chitrakmoola swarasa was given
- Vati of 180 mg was prepared
- Prepared tablets were analysed with I.P. parameters.

Table 1: Ingredients of Laghuvatavidhwansan Rasa

Drug	Latin name	Family	Part used	Quantity
Shuddha parad	Mercury	-	-	1 part
Shuddha gandhak	Sulphur	-	-	1 part
Shuddha vatsanabha	<i>Aconitum ferox</i>	Ranunculaceae	tubers	1/16 th part
Shuddha chitrak	<i>Plumbago zeylanica</i>	Plumbaginaceae	roots	Bhavana dravya

Table 2: Dose and schedule

Peculiarities	
Number of subjects	50
Medicine given	Laghuvatavidhwansan rasa
Dose	180 mg
Time	Vyanodana kaal
Route of administration	Oral
Anupan	Ushnodak

Literary study

A detailed study of Sandhishoola, Arthritis was done along with a study on the drugs selected for the present study. Various books of Ayurveda, Modern science, and the Internet, related to the subject, were referred.

Drugs-Kajjali, Shuddha Vatsanabha, Chitrak moola swarasa are the contents of Laghuvatavidhwansan Rasa.

Drug standardisation done from standard laboratory (MFG.LIC.NO.PD/AYU/003/07B)

Drug authentication done from Department of Botany, University of Pune, Maharashtra, India.

Clinical trial was carried out after approval from ethical committee Ref. No. BVDU/Exam/446/2015-16

Clinical material- Total 70 patients were screened 56 were registered.

50 patients completed the trials, 6 patients were drop out. The reason for drop out were that the patients did not follow the instructions properly, some were transferred on modern medicine. During treatment period of patient, no side effect were found to be observed at Bharati Vidyapeeth Ayurveda Hospital OPD and IPD of Kayachikitsa Department, Pune, Maharashtra, India

Inclusion Criteria

- Age - between 18-80 years
- Sex - Both male and female
- Patient of knee joint arthritis irrespective of types of arthritis presenting with shoola (Pain) in Janu sandhi with a description of mild to severe will be included.
- Any other condition other than that of exclusion criteria

Exclusion Criteria

- Known case of Fracture, ligamentum tear, dislocation, osteomyelitis, tumour of bones or of any joint, of recent.
- Pregnancy.
- Lactation.
- Patients taking NSAID, analgesics treatment for the same purpose.
- Patients undergone major surgery

Withdrawal Criteria

- Patient not obeying and not taking proper medication
- Patient not completing all the follow-up properly
- Patient having any major illness / occurrence of serious adverse events while undertaking treatment. Even though subjects may be withdrawn prematurely from the study, data of these subjects will be kept.

- Further continuation of the study is likely to be detrimental to health of patient
- The patient is not willing to continue the trial to follow the assessment schedule.

Assessment Criteria

History and clinical examination

Subjective Criteria

- Primary end point – To reduce sandhishoola
- Secondary end point - To reduce associated symptoms sandhi shotha (swelling), sparsha asahatwa (Tenderness), sandhi atopa (Crepitus), Functional ability (mobility).

Gratation of symptoms

Follow up of each symptom will be taken at each follow up.

Table 3: Gratation of pain will be taken at each follow up (by visual analogue scale)

0-4 mm	No pain
5-44 mm	Mild pain
45-74 mm	Moderate pain
75-100 mm	Severe pain

Table 4: Swelling

0	No swelling
1	Slight swelling
2	Cover well prominence of joint
3	Much elevated joint

Table 5: Grading for shotha (swelling)

Joint	Side	BT			AT		
		S.P	M.P	I.P	S.P	M.P	I.P
Knee joint Circumference	RT						
	LT						

S.P - Supra patellar, M.P - Mid patellar, I.P - Infra patellar, RT – Right knee joint, LT – Left knee joint, BT – Before treatment, AT – After treatment

Thread and measuring tape used for measurement of shotha.

Table 6: Functional Ability

0	Normal activity
1	Moderate restriction of movement
2	Severe restriction of movement
3	Confined to bed

Table 7: Crepitus

0	No crepitus
1	Palpable
2	Moderate
3	Profound (Audible)

Table 8: Sparsha asahyata (tenderness)

0	Nil
1	Mild tenderness, causing patient to wince on digital pressure
2	Moderate tenderness, causing patient to wince and withdraw on digital pressure
3	Severe tenderness, patient does not allow to touch

Age

Out of 50 patients, 0 patients (0%) belong to the age group of 18-24 years, 5(10%) patients belong to the age group of 25 to 31 years, 3(6%) patients belong to the age group of 32-38 years, 11(22%) patients belong to the age group of 39-45 years, 4(8%) patients belong to the age group of 46-52 years, 12(24%) patients belong to the age group of 53-59 years, 8(16%) patients belong to the age group of 60-66 years, 4(8%) patients belong to the age group of 67-73 years, 3(6%) patients belong to the age group of 74-80 years. (Graph 1)

Graph 1

Sex

Out of 50 patients, 10 were male and 40 were females. (Graph 2)

Graph 2

Occupation

Out of 50 patients, 6 were clerks, 3 were farmers, 13 were housewives, 9 were maid, 6 were nurse, 1 was retired, 1 was tailor, 2 were teachers, 8 were workers and 1 was having other profession. (Graph 3)

Graph 3

Prakruti

Out of 50 patients, 1(2%) patient had KaphaPitta Prakruti (KP), 1(2%) patient had KaphaVata Prakruti (KV), 3(6%) were having PittaKapha Prakruti (PK), 8(16%) were having PittaVata Prakruti (PV), 5(10%) were having VataKapha Prakruti (VK) and 32(64%) were having VataPitta Prakruti (VP). (Graph 4)

Graph 4

Table 9: Observations on Pain

Pain	Median		Wilcoxon Signed Rank Test	P-Value	% Effect	Result
	BT	AT				
Right	60	40	-5.960 ^a	0.000	37.9	Significant
Left	60	30	-6.069 ^a	0.000	39.0	Significant

BT – Before treatment, AT – After treatment

Table 10: Observations on Swelling

Swelling	Median		Wilcoxon Signed Rank Test	P-Value	% Effect	Result
	BT	AT				
Right	1	0	-3.000 ^a	0.003	30.0	Significant
Left	1	0	-2.530 ^a	0.011	26.7	Significant

BT – Before treatment, AT – After treatment

Table 11: Observations on Suprapatellar Swelling

SP (Suprapatellar swelling)	Mean		Z-Value	P-Value	% Effect	Result
	BT	AT				
Right	27.3	26.9	-1.799	0.036	1.7	Significant
Left	27.3	26.9	-1.799	0.036	1.7	Significant

BT – Before treatment, AT – After treatment

Table 12: Observations on Midpatellar Swelling

MP (Midpatellar swelling)	Mean		Z-Value	P-Value	% Effect	Result
	BT	AT				
Right	25.39	24.94	-1.838	0.033	1.8	Significant
Left	25.39	24.94	-1.838	0.033	1.8	Significant

BT – Before treatment, AT – After treatment

Table 13: Observations on Infrapatellar Swelling

IP (Infrapatellar swelling)	Mean		Z-Value	P-Value	% Effect	Result
	BT	AT				
Right	23.9	23.378	-1.911	0.028	2.2	Significant
Left	23.9	23.378	-1.911	0.028	2.2	Significant

BT – Before treatment, AT – After treatment

Table 14: Observations on Crepitus

Crepitus	Median		Wilcoxon Signed Rank Test	P-Value	% Effect	Result
	BT	AT				
Right	1	1	-1.123	0.214	23.5	Not Significant
Left	1	1	-1.000	0.426	19.2	Not Significant

BT – Before treatment, AT – After treatment

Table 15: Observations on Functional Ability

Functional Ability	Median		Wilcoxon Signed Rank Test	P-Value	% Effect	Result
	BT	AT				
Right	1	0	-6.083 ^a	0.000	63.8	Significant
Left	1	0	-6.083 ^a	0.000	63.8	Significant

BT – Before treatment, AT – After treatment

Table 16: Observations on Tenderness

Tenderness	Median		Wilcoxon Signed Rank Test	P-Value	% Effect	Result
	BT	AT				
Right	1	0	-2.946 ^a	0.005	27.0	Significant
Left	1	0	-2.828 ^a	0.005	27.6	Significant

BT – Before treatment, AT – After treatment

Table 17: Observations on Pulse Rate

Pulse Rate	Mean		Z-Value	P-Value	% Effect	Result
	BT	AT				
	78	79.6	-1.505	0.139	2.1	Not Significant

BT – Before treatment, AT – After treatment

Table 18: Observations on Systolic B.P.

Systolic B.P.	Mean		Z-Value	P-Value	% Effect	Result
	BT	AT				
	119.8	116.4	2.367	0.058	2.8	Not Significant

BT – Before treatment, AT – After treatment

Table 19: Observations on Diastolic B.P.

Diastolic B.P.	Mean		Z-Value	P-Value	% Effect	Result
	BT	AT				
	73	74.04	-1.000	0.322	1.4	Not Significant

BT – Before treatment, AT – After treatment

Pain

Since observations are on ordinal scale we have used Wilcoxon Signed Rank test to test the efficacy. From table 9 we can observe that P-Values for right leg and left leg are less than 0.05 hence we conclude that effect was significant.

Swelling

We have quantitative data with sample size more than 30 hence we have used Z-Test to test the efficacy. From table 11 we can observe that P-Values are less than 0.05 hence we conclude that there is significant change in mean after treatment. Hence the effect was significant

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Crepitus

Since observations are on ordinal scale we have used Wilcoxon Signed Rank test to test the efficacy. From table 14 we can observe that P-Values for right leg and left leg are greater than 0.05 hence we conclude that effect was not significant.

Functional Ability

Since observations are on ordinal scale we have used Wilcoxon Signed Rank test to test the efficacy. From table 15 we can observe that P-Values for right leg and left leg are less than 0.05 hence we conclude that effect was significant.

Tenderness

Since observations are on ordinal scale we have used Wilcoxon Signed Rank test to test the efficacy. From table 16 we can observe that P-Values for right leg and left leg are less than 0.05 hence we conclude that effect was significant.

Pulse Rate

We have quantitative data with sample size more than 30 hence we have used Z-Test to test the efficacy. From table 17 we can observe that P-Values are greater than 0.05 hence we conclude that there is no significant change in mean after treatment.

Blood Pressure

We have quantitative data with sample size more than 30 hence we have used Z-Test to test the efficacy. From table 18 we can observe that P-Values are greater than 0.05 hence we conclude that there is no significant change in mean after treatment.

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DISCUSSION

Sandhishoola is a common symptom in almost all vata vyadhi. Sandhishoola as a lakshan has to be taken into consideration. It is the outer exhibition of an underlying pathology. If not attended to in time it may hamper the way of life of the patient. Though not fatal it will cripple the life of the patient.

To reduce knee joint pain rasakalp as show better result in reducing knee joint pain. It can give result in low dose and its action is fast. So, it was decided to use and see the action of Laghuvatavidhwansan rasa on knee joint pain (janu sandhi shoola).

In this study effect of Laghuvatavidhwansan rasa was investigated among the patient of janu sandhi shoola. The finding indicated that using Laghuvatavidhwansan Rasa has favorable effect on reducing Knee joint pain. Also, it has shown good results on other associated symptoms.

In this study dose of 180mg in vyanodana kaal of drug was selected as 360 mg was prescribed in the texts and hence this dose was given in divided form. Also, we wanted to see the effect of Laghuvatavidhwansan Rasa only on knee joint pain in order to limit the study and to have a precise observation since it has been mentioned in Rasa Chandanshu that Laghuvatavidhwansan Rasa is effective to reduce vataroga effectively. As mentioned in reference we wanted to evaluate the shoolahna and shothaghna action of drug.

Hence, drug was given in vyanodana kaal dose in knee joint pain for seven days irrespective of its severity and type of arthritis. Anupan of ushna jala is the most superior as was mentioned in books so it was prescribed to serve our purpose.

The dose of the medicine and follow up period was given according to classical reference and also having done discussion with eminent physicians and as per ethical committee suggestion. Because of theoretical background, fast action of drug, cost effectivity Laghuvatavidhwansan Rasa was selected in this study. Also, no trials have ever been conducted on this drug on knee joint pain till date or has not been published, so, we chose this topic and drug.

Fifty sample size was selected as per ethical committee's suggestion. Total 70 patients were screened 56 were registered. 50 patients completed the trials, 6 patients were drop out. The reason for drop out were that the patients did not follow the instructions properly, some were transferred on modern medicine. During treatment period of patient, no side effect was found to be observed.

Age

Out of 50 patients, 0 patients (0%) belong to the age group of 18-24 years, 5(10%) patients belong to the age group of 25 to 31 years, 3(6%) patients belong to the age group of 32-38 years, 11(22%) patients belong to the age group of 39-45 years, 4(8%) patients belong to the age group of 46-52 years, 12(24%) patients belong to the age group of 53-59 years, 8(16%) patients belong to the age group of 60-66 years, 4(8%) patients belong to the age group of 67-73 years, 3(6%) patients belong to the age group of 74-80 years

Maximum number of patients can be seen in the age group of 40 years and above. The probable cause of this maybe due to hard work, strenuous physical activity and degeneration of body tissues due to aging.

Sex

Out of 50 patients, 10 were male and 40 were females. There is no specificity in janu sandhi shoola with regards to gender. But a variation can be seen in the incidence rates due to increased susceptibility of females for low calcium levels and degeneration of body tissues due to advancing age. This cause maybe attributed to hormonal imbalance either in pre-menopausal, menopausal and post-menopausal period.

Occupation

Out of 50 patients, 6 were clerks, 3 were farmers, 13 were housewives, 9 were maid, 6 were nurse, 1 was retired, 1 was tailor, 2 were teachers, 8 were workers and 1 was having other profession.

Almost all the patients have an active lifestyle including the housewives who are doing all household chores. As the active group of patients are prone to vitiation of vata and hence are more susceptible for sandhishoola. Thus, this strengthens the view of Vata implications to cause the symptom of sandhishoola which is triggered by excessive physical demand of the joint utility.

Prakruti

Out of 50 patients, 1(2%) patient had KaphaPitta Prakruti, 1(2%) patient had KaphaVata Prakruti, 3(6%) were having PittaKapha Prakruti, 8(16%) were having PittaVata Prakruti, 5(10%) were having VataKapha Prakruti and 32(64%) were having VataPitta Prakruti. It can be observed that majority of the patients are having vataj as predominant prakriti. This prakriti is more prone to give rise to the symptom of sandhishoola due to involvement of vata dosha.

Pain

Medicine was given to patient irrespective of severity of pain and type of arthritis. after analysing the data, it was found that 5 patients had mild pain, 43 had moderate pain, 2 had severe pain. After treatment, there was a significant reduction in pain. Also, as per VAS scale, on a scale of 1 to 100, it can be observed that there has been a significant reduction in pain with context to Right knee joint being 60 Before treatment and 40 after treatment and for left knee joint being 60 before treatment and 30 at after treatment.

The properties of Laghuvatavidhwansan Rasa are shoopalprashaman, shotha prashaman, deepan, pachan, lekhan. Also with regards to kajjali which acts as a catalyst and increases the bioavailability of the drug, the action is supposed to be fast and immediate. Hence. this drug has given a good result in janu sandhishoola.

Swelling

Medicine was given to patients having complaints of janu sandhi shotha and after analysing the data it can be observed that there was a significant reduction in swelling i.e. for Right knee joint being 1 Before treatment and 0 after treatment and for left knee joint being 1 before treatment and 0 at after treatment.

Also the S.P., M.P., I.P. swelling can be seen to be reduced significantly due to the shothanashak, deepan, pachan, lekhan karma of Laghuvatavidhwansan Rasa.

Crepitus

After analysing the data, it can be observed that no significant results have been obtained for the symptom of crepitus.

Functional Ability

It can be observed after the data analysis that there has been a significant improvement in functional ability of the patient with before treatment 1 and after treatment 0 for both Right and Left Knee Joint.

This result can be attributed to the shoopalprashaman karma of Laghuvatavidhwansan Rasa which thereby helped the patient in movement and hence there has been a significant change in functional ability.

Tenderness

After statistical analysis it can be concluded that there has been a significant reduction in tenderness with before treatment 1 and after treatment 0 for both Right and Left Knee Joint.

This effect maybe due to the shothahara, deepan, pachan karma of Laghuvatavidhwansan Rasa which thereby helped in reducing tenderness.

Pulse Rate

Pulse rate of every patient was monitored at each follow-up. Reason being to keep a tab on the pulse rate and to see whether the drug has had any toxic effects on the health of the patient. But, It can be seen that there is no significant change in the pulse rate of the patient with Before Treatment being 78 and After Treatment being 79.6

Hence it can be concluded that Laghuvatavidhwansan Rasa is a non-toxic formulation even though it contains kajjali (parad, gandhak), vatsanabh since prior proper shuddhi has been done before the commencement of the trial.

Blood Pressure

Blood Pressure of every patient was monitored at each follow-up. Reason being to keep a tab on the pulse rate and to see whether the drug has had any toxic effects on the health of the patient. But, It can be seen that there is no significant change in the Blood Pressure of the patient with systolic blood pressure Before Treatment being 119.8 and After Treatment being 116.4 and diastolic blood pressure Before Treatment being Before Treatment 73 and After Treatment 74.04.

Hence it can be concluded that Laghuvatavidhwansan Rasa is a non-toxic formulation even though it contains kajjali (parad, gandhak), vatsanabh since prior proper shuddhi has been done before the commencement of the trial.

Table 20: Drug Pharmacodynamics

Drugs	Rasa	Guna	Veerya	Vipaka	Karma
Kajjali					Acts as a catalyst and increases bioavailability of drug
Vatsanabh	Madhur	Ruksha, Tikshna, Laghu, Vyavayi, Vikasi	Ushna	Madhur	Shoopalprashaman, shothanashak, deepan, pachan, swedajanan, ruchivardhak, mutrajanan, jwaraghna
Chitrak	Katu	Laghu, Ruksha, Tikshna	Ushna	Katu	Shoopalprashaman, lekhan, deepan, bhedan, arshoghna

Probable mode of action

The action of the drug has to start either at a local or general level. The drug Laghuvatavidhwansan rasa is not a local applicant. The action of Laghuvatavidhwansan rasa is generalized and causes the pain pathways to inhibit or breach the communication. The significant reduction in the lakshanas may be attributed to dosha shaman and dhatu rearrangement. the action of Laghuvatavidhwansan rasa could not be justified chemically but its effect on the lakshan of sandhishoola etc. and tridosha siddhant is established that the trial drug Laghuvatavidhwansan rasa is a rational combination of shoopalprashaman dravyas along with kajjali which acted like a catalyst and increased the bioavailability of the drug.

The combined effect of the drug Laghuvatavidhwansan rasa was that it has the gunas of shoopalprashaman, deepan, pachan, lekhan and is katu rasatmak and ushna veeryatmak. Hence the action of Laghuvatavidhwansan rasa emphasized as acting on

reducing the srotorodha of asthivaha and majjavaha srotas. It does amapachan. The shleshmadhara kala when it becomes inflamed it gives rise to pain. It mainly does the shoshan of the content increased in the sandhi kala and hence pacifying shleshak kapha thereby facilitating pain relief in the joint. The vata inflow regulation can be understood as the inhibition of the pain pathways in pain transmission as pain blockers.

It can be said that kajjali acts as a GI stimulant, locally also acts as neuro chemical irritant for intestinal mucosa. Acts as catalyst and hence through its catalytic action, there is a better absorption of remaining herbal pharmacological molecules is also augmented

CONCLUSION

Laghuvatavidhwansan rasa is having shoolahara, shothahara, deepan, pachan, lekhan properties. Laghuvatavidhwansan rasa has provided statistically significant results in sandhi shoola,

sandhi shotha, functional ability, sparsha asahyata. Laghuvatavidhwansan rasa has not showed significant result in reducing sandhi atopa. Any side effect has not been observed during and after its clinical trial. In a nutshell, it can be concluded that Laghuvatavidhwansan rasa can be a potent analgesic and anti-inflammatory drug. However, this trial was carried out on a very small scale and clinical trials on a large scale are needed which may lead to opening of the new horizon. The clinical study of Laghuvatavidhwansan rasa was carried out and it can be concluded that-

The evaluation of the drug Laghuvatavidhwansan rasa is effective in reducing janu sandhishoola i.e. knee joint pain in knee joint arthritis irrespective of type of arthritis. Sandhi shoola i.e. knee joint pain in knee joint arthritis has been studied from different Samhitas and modern books in detail. Likewise detailed study of Laghuvatavidhwansan rasa has been carried out.

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