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ANALYTICAL AND CLINICAL EVALUATION OF MURCHITA AND AMURCHITA KSHEERABALA TAILA WITH SAHACHARADI KWATHA IN THE MANAGEMENT OF GRIDRASI

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ABSTRACT

Sneha and its products play a vital role in the field of pharmaceutics. Classics claim it mandatory for any raw sneha to undergo the process of murchana prior to the preparation of every medicated oil with the help of drugs mentioned for it. Taila murchana is the best method to remove the amadosha, durgandha and ugratha of the crude oil that eventually increase the potency of the taila. Ksheerabala taila and Sahacharadi kwatha æ most frequently used combination among the ayurvedic physicians for treating Gridrasi. A research work to focus on the concept of murchana on the basis of analytical parameters of ksheerabalataila and its efficacy with sahacharadi kwatha is a need of the hour. Till date no study is reported as such emphasizing the above. Analytical study shows that increased saponification value, refractive index, specific gravity, ph and decreased loss on drying, acid value and iodine value for ksheerabala taila prepared with murchita tila taila compared to that of ksheerabala taila prepared by using plain tila taila. Chromatographic findings state that the numbers of peaks are more in ksheerabala with murchita tila taila at 366nm. In clinical study both the group showed significant change in visual analogue scale of pain , straight leg raising test and oswestry disability index of low back pain, symptoms like stambha, suptata, toda, ruk, tandra and gourava but on comparison between two groups the difference was insignificant. No significant changes in the blood routine examination.

KEYWORDS: Snehakalpana, Murchana, ksheerabala taila, sahacharadi kwatha and Gridrasi.

MATERIALS AND METHODS

Analytical study carried out at VPSV AVC, Pharmacy, kottakkal and Aryavaidyashala laboratory respectively. In the preparation, murchita tila taila[1], ksheerabala taila[2] (with murchita tila taila and plane tila taila), and sahacharadi kwatha[3] was prepared strictly as per the guidelines of the classical literature. ksheerabala taila prepared by using the same tested sample of tila taila.

Assessment criteria -Analytical study-parameters

- Organoleptic characters
- Physico- chemical parameters
- Chromatography

Organoleptic characters

- Colour
- Odour
- Taste
- Consistency

Detecting the bioconstituents in the drugs of murchana

Physico chemical parameters[4]

- Specific gravity
- Refractive index
- Acid value
- Saponification value
- Iodine value
- Viscosity
- Peroxide value
- Ph
- Ash value
- Ester value
- LOD

Chromatography

- HPTLC

Solubility in different solvents

- Ether
- Methanol

Clinical study methodology

Study design: comparative study with a control group.

Study setting: VPSV ayurveda college hospital, kottakkal OPD and IPD

Study population: patients registered in **VPSV** ayurveda college hospital, kottakkal between the age group of 20-60 diagnosed case of Gridhrasi, irrespective of sex.

Inclusion Criteria

Patients between the age group of 20 to 60 years.

No-Sex discrimination

Patients with pratyatma lakshana of Gridhrasi.

Patients having positive physical signs of radicular pain/ Sciatica

Visual Analogue scale (VAS) score of >5

Exclusion criteria

Neoplastic conditions of spine.

Trauma of spine

Infections of spine. Chronicity >10years

Spondylolisthesis

Congenital abnormalities of spine

Tuberculosis of spine

Other major systemic diseases

Sample size: Sample size is 50 in each group (two groups)

Sampling technique: Simple random sampling technique. Random number selection by random number table

Data collection: Through case Performa, clinical examination

Study tool: Assessment tool for clinical study

Objective & subjective parameters based on features of Gridhrasi (Sciatica)

Visual Analogue Scale

Oswestry Low Back Pain Disability index

Investigations: Routine hematological investigations, RBS

Procedure: The patients satisfying the inclusion criteria were selected for the study. Selected patients were divided into two groups. The study duration was 28 days and three follow up will be done with an interval of 10 days

Intervention

Group A patients -Sahacharadi kwatha 48 ml with Murchita ksheerabala taila 6 ml twice daily (morning and evening) for 28 days.

Group B patients - Sahacharadi kwatha 48 ml with Amurchita ksheerabala taila 6 ml twice daily (morning and evening) for 28days.

Assessment criteria

Table No 1: Based on proper grading.

Grade	Sthambha	Toda	Gourava	Supatata	Tandra	aruchi	Spandana
0	No stiffness	Absent	Absent	Absent	Absent	Absent	Absent
1	Upto 20%impairment in the range of movement	Mild	Present	Present	Present	Present	Present
2	25-50%	Moderate	-	-	-	-	-
3	50-75%	Severe	-	-	-	-	-

Visual Analogue Scale - Here a scale is drawn with numbers from 1 to 10 at equal distant, It is a 10cm line with zero at one end &10cm at another end. Zero represents no pain & 10 represent the worst pain. Where the least scoring stands for No Pain or Minimal Pain and the highest scoring stands for Severe Pain.

Oswestry Disability assessment Questionnaire: Questionnaire description: 10 sections describing the pain and its impact with each section scored from 0-5, with the first statement being zero and indicating the least amount of disability and the last statement is scored 5 with higher values indicating more severe impact. Indicating most severe disability. The index is scored from 0 to 100. Zero is equated with no disability and 100 being maximum disability. 0% to 20%: Minimal disability, 21%-40%: Moderate Disability, 41%-60%: Severe Disability, 61%-80%: Crippling back Pain, 81%-100%: These patients are either bed bound or have an exaggeration of their symptoms.

SLR test

More than 90 -degree	0
71-90	1
51-70	2
31-50	3
Up to 30	4

Table No. 2: Drug review of murchana process.

Sl.No.	Drugs	Latin name
1	Manjishta	Rubia cordifolia
2	Harithaki	Terminalia chebula
3	Vibhithaki	Terminalia bellerica
4	Amalaki	Emblica officinalis
5	Musta	Cyperus rotundus
6	Haridra	Curcuma longa
7	Hribera	Pavonia odorata
8	Lodhra	Symplocus racemosa
9	Sucipushpa	Pandanus odorotissimus
10	Vatankura	Ficus bengalensis
11	Nalika	Cinnamomum tamala
12	Tila taila	Sesamum indicum
13	water	-

Composition of ksheerabala taila (Murchita)

Bala (Sida rhombofolia), Murchita tila taila (Sesame indicum), Ksheera.

Composition of ksheerabala taila (Amurchita)

Bala (Sida rhombofolia), Plane tila taila (Sesame indicum), Ksheera.

Drug review of sahacharadi Kashaya

Sahachara, Devadaru and Nagara

RESULTS

Analytical study

Table No 3: Organoleptic characters.

Sl.no	parameters	Ksheerabalataila(murchita)	Ksheerabalataila(amurchita)
1	Odor	aromatic	Not characteristic
2	Taste	Astringent	Not characteristic
3	Consistency	oily	Oily
4			

Table No 4: Physico chemical parameters.

Sl.no	parameters	Ksheerabalataila(murchita)	Ksheerabalataila(amurchita)
1	Specific gravity	0.9204	0.9170
2	Refractive index	1.467	1.466
3	Acid value	3.3	6.3
4	Saponification value	207.3	198.3
5	Iodine value	100.3	103.4
6	Viscosity	47.43	49.08
7	Peroxide value	192.26	180.22

8	LOD	0.2	0.3
9	Ph	6.5	3.5
10	Ester value	192.26	180.20
11	Ash value	0.0705	0.00215

Table No 5: Bio constituents of the drugs of murchana and Bala.

No	Drugs	Alkaloid	tannin	terpenoids	saponin	glycoside	Volatile oil
1	Manjishta	-	-	-	-	+	-
2	Haritaki	-	+	+	+	-	-
3	Vibitaki	-	+	+	-	-	-
4	Amalaki	-	+	+	+	-	-
5	Musta	-	-	+	+	-	-
6	Haridra	-	-	-	-	-	+
7	Hribera	-	-	-	-	-	+
8	Lodra	+	-	-	-	-	-
9	Ketakipushpa	+	-	-	-	-	+
10	Vatankura	-	-	-	-	-	-
11	Tamalapatra	-	-	-	-	-	+
12	Bala	+	-	+	-	-	-

SOLUBILITY: Both samples are freely soluble in Ether and sparingly soluble in Methanol.

Chromatography

- **HPTLC**

A. Sample details

1. Kshirabala taila–Amurcchitam
2. Kshirabala taila - Murcchitam

B. Test solution

1. 10 g each of above samples are weighed, extracted with 10ml Methanol separately and spotted as 10 microlitre.

C. Stationary phase

Merk, 1.05554.0007, TLC Silica gel 60 $F_{254,}$ 10x10 cm Aluminium sheet.

D. Mobile phase

Toluene: Ethyl acetate: Formic acid: Methanol (7:5:1:0.5)

E. Development

CAMAG 10 x 10 cm Twin trough chamber.

F. HPTLC instrumentation

CAMAG Linomat 5, CAMAG TLC Scanner 3, CAMAG Reprostar 3.

G. Derivatization

Iodine vapour.

Table No 6: Total peak number, area, % of area and Rf value.

Sample	ksheerabalataila (amurchitam) at 254nm	ksheerabalataila (amurchitam at 366nm	ksheerabalataila (murchitam) at 254nm	ksheerabalataila (murchitam at 366nm
No. of peaks	07	02	7	05
Area	37356.2 (AU)	3382.9 (AU)	43901.6 (AU)	10802.4(AU)

Table No 7: ksheerabalataila (amurchitam) at 254nm.

Peak Number	Rf VALUE	AREA(AU)	% AREA(AU)
1	0.01	117.5	0.31
2	0.12	174.2	0.47
3	0.28	2139.1	5.73
4	0.33	1026.4	2.75
5	0.50	2318.6	6.20
6	0.58	2727.4	7.30
7	0.68	28853.0	77.24

Table No 8: ksheerabalataila (amurchitam at 366nm.

Peak Number	Rf VALUE	AREA(AU)	% AREA(AU)
1	0.28	788.2	23.30
2	0.70	2594.7	76.70

Table No 9: ksheerabalataila (murchitam) at 254nm.

Peak Number	Rf VALUE	AREA(AU)	% AREA(AU)
1	0.01	168.0	0.38
2	0.29	1318.9	3.00
3	0.33	825.7	1.88
4	0.46	3359.4	7.65
5	0.58	9486.0	21.61
6	0.68	26058.8	59.36
7	0.81	2684.8	6.12

Table No 10: ksheerabalataila (murchitam at 366nm).

Peak Number	Rf VALUE	AREA(AU)	% AREA(AU)
1	0.28	334.0	3.09
2	0.32	530.5	4.91
3	0.46	4899.7	45.36
4	0.58	2434.2	22.53
5	0.70	2604.0	24.11

CLINICAL STUDY RESULTS

STATISTICAL ANALYSIS OF CLINICAL PARAMETERS

Table No 11: Effect of treatment on sthambha score in group A & B.

Group	Mean score		MD	SD	t	p
	BT	AT				
A	2.18	1.66	0.52	0.68	19.26	<0.05
B	2.30	1.52	0.78	0.72	8.50	<0.05

Table No: 12 Comparison of effect of treatment on Sthambha score in group A&B

Group	Mean AT	t	p
A	1.66	1.66	>0.05
B	1.52		

Table No: 13 Effect of treatment on Tandra score in group A & B.

Group	Mean score		t	p
	BT	AT		
A	0.22	0.10	1.64	<0.05
B	0.20	0.10	1.60	<0.05

Table No: 14 Comparison of effect of treatment on Tandra score in group A & B

Group	Mean AT	t	p
A	0.10	0.00	0.5
B	0.10		

Table No 15: Effect of treatment on spandana score in group A & B.

Group	Mean score		t	p
	BT	AT		
A	0.50	0.28	2.29	0.02
B	0.36	0.20	1.79	0.03

Table No 16: Comparison of effect of treatment on spandana score in group A & B.

Group	Mean AT	t	p
A	0.28	0.93	0.35
B	0.20		

Table No 17: Effect of treatment on toda score in group A & B.

Group	Mean score		MD	SD	t	p
	BT	AT				
A	2.64	2.06	0.58	0.070	2.98	<0.05
B	2.72	1.88	0.84	0.79	7.50	<0.05

Table No 18: Comparison of effect of treatment on toda score in group A & B.

Group	Mean AT	t	p
A	2.06	0.91	>0.05
B	1.88		

Table No: 19 Effect of treatment gaurava on score in group A and B

Group	Mean score		t	p
	BT	AT		
A	0.66	0.26	4.33	<0.05
B	0.58	0.56	0.20	0.84

Table No: 20. Comparison of effect of treatment on gaurava score in group A and B

Group	Mean AT	t	p
A	0.26	3.17	< 0.05
B	0.56		

Table No: 21 Effect of treatment on grahana score in group A and B and.

Group	Mean score		t	p
	BT	AT		
A	0.36	0.16	2.31	0.02
B	0.38	0.20	2.00	0.04

Table No: 22 Comparison of effect of treatment on grahana score in group A and B.

Group	Mean AT	t	p
A	0.16	0.51	0.60
B	0.20		

Table No: 23 Effect of treatment on supthatha score in group A and B

Group	Mean score		MD	SD	t	p
	BT	AT				
A	2.22	1.5	0.72	0.54	9.34	<0.05
B	2.26	1.46	0.8	0.53	10.58	<0.05

Table No: 24 Comparison of effect of treatment on supthatha score in group A& B

Group	Mean AT	t	p
A	1.5	0.23	0.81
B	1.46		

Table No: 25 Effect of treatment on aruchi score in group A and B

Group	Mean score		t	p
	BT	AT		
A	0.24	0.06	2.57	0.01
B	0.20	0.12	1.08	0.27

Table No: 26 Comparison of effect of treatment on aruchi score in group A& B.

Group	Mean AT	t	p
A	0.06	1.66	0.29
Bh	0.12		

Table No: 27 Effect of treatment on VAS score in group A and B.

Group	Mean score		MD	SD	t	p
	BT	AT				
A	2.04	1.46	0.58	0.70	7.13	<0.05
B	2.04	1.24	0.80	0.78	7.22	<0.05

Table No: 28 Comparison of effect of treatment on VAS score in group A and B.

Group	Mean AT	t	p
A	1.46	1.28	0.20
B	1.24		

Table No 29: Effect of treatment on oswestryscore in group A and B

Group	Mean score		MD	SD	t	p
	BT	AT				
A	2.36	1.68	0.68	0.74	4.50	<0.05
B	2.48	1.58	1.06	0.68	10.98	<0.05

Table No 30: Comparison of effect of treatment on oswestry score in group A & B.

Group	Mean AT	t	p
A	1.68	0.60	0.55
B	1.58		

Table No 31: Effect of treatment on SLR score in group A and B.

Group	Mean score		MD	SD	t	p
	BT	AT				
A	2.60	2.24	0.36	0.69	3.67	<0.05
B	2.62	1.96	0.66	0.87	5.35	<0.05

Table No 32: Comparison of effect of treatment on SLR score in group A & B.

Group	Mean AT	t	p
A	2.24	2.21	0.20
B	1.96		

DISCUSSION

Acid base balance is an important factor that determines the health of an individual. An acidic pH is considered as harmful to the body as proved by scientific study and hence the alkaline therapy is becoming popular in the west. It is observed that the pH beween 6.2-6.8 is ideal to the body. Very low pH irritates the skin whereas higher pH corrods the skin. The murchita

tila taila and ksheerabala thaila with murchita tila thaila are slightly acidic and almost tending towards neutral. This indicates that the murchana samskara changes the pH of oil, and makes the oil suitable to the body and medicinal purpose.

The specific gravity increased after the process of Murchana which may be due to the addition of some active bio constituents from the herbs used for Murchana. Duration of heating also affects the specific gravity. Specific gravity of Amurchita ksheerabala thaila was found less than the when compared to murchita ksheerabala thaila sample. It can be presumed that due to the process of murchana more active principles may get dissolved in the finished oil leading to high therapeutic efficacy than the amurchita sample.

There was not much variation in the refractive indexes of samples. The refractive index after murchana increased which may be due to colourisation and phytoconstituents. Refractive index of murchita ksheerabala thaila is more than that of refractive index of amurchita ksheerabala thaila. Acid value indicates the amount of the free fatty acid present in oil. Here after murchana acid value reduced that indicates less percentage of free fatty acids or in other words stable nature of fatty acid and decreased rancidity. Ultimately it leads to the increased shelf life. That is acid value of murchita ksheerabala thaila is lesser than the amurchita ksheerabala thaila.

Saponification is an indication of the molecular weight of the fat or oils, saponification number and molecular weight of oil are inversely proportional to each other. Here after murchana saponification value increased in both Murchita tila thaila and murchita ksheerabala thaila so it indicates higher content of low molecular weight fatty acid and quick absorption. Iodine value is an index of the degree of unsaturation of oil and is directly proportional to the content of unsaturated fatty acids. Higher the iodine values higher the degree of unsaturation. Greater the degree of unsaturation greater will be possibility of the oil becoming rancid due to atmospheric oxidation. Here after murchana iodine value is reduced in murchita tila taila and murchita ksheerabala thaila that means decreased degree of unsaturation. So possibility of rancidity less, increased shelf life is maintained. The iodine value of amurchita sample was higher when compared to the murchita sample.the decreased iodine value may be due to the oxidation across the double bonds of unsaturated fats.

The LOD of murchita tila thaila and murchita ksheerabala thaila is less than compared to plane tila taila and amurchita ksheerabala thaila. The ash value was considerably less in

amurchita tila taila and amurchita ksheerabala taila when compared to murchita samples indicating the less inorganic content.

Therapeutic effect of medication: The assessments of results were made by adapting the standard methods of scoring questionnaires and the signs and symptoms of Gridhrasi. It included the assessment of Pain, Functional disability test along with signs and symptoms as per Ayurvedic classics such as Stambha, Ruk, Toda, Grahana, Spandana, Aruchi, Gaurava, and Tandra. In clinical study Gridhrasi one among the nanatmaja vata vikaras is characterized by a severe pain radiating from sphik, kati pradesha down to the toes it is exemplified by vataja symptoms like ruk sthamba, toda, grahana and spandana additional symptoms like aruci,[5],[6] tandra and gaurava are seen in vatakaphaja type of Gridhrasi.

Probable mode of action: Sahacharadi kwatha and ksheerabala thaila combination is a very popular yogas among ayurvevedic physicians. Sahacharadi kwatha ingredients are sahachara, devadaru and nagara. This kashaya is vatahara having specificity in vatavyadhis pertaining to lower extremities like Gridrasi. Sahachara possesses tiktha and madhura rasa devadaru has tiktha rasa and nagara has katu rasa all these properties contributing to vata kapha hara properties to that formulation.[7] by the virtue of ushna veerya it act as vata kapha hara, vedana samaka and avaranahara properties. Vata prapokopa and avarana etc are the main causative factor for Gridrasi. Ksheerabala thaila also one among the main vatahara yoga. We can use in allmost four modes of drug administration.Main ingredient is bala kalka. Ksheerabala thaila is goodin vatika and vata kaphaja predominant conditions. It also provide brumhana jivana and rasayana properties. The above said study reveals that sahacharadi kwatha with ksheerabala taila (Murchita and amurchita) are effective in the treatment of Gridrasi. Both the group A and B showed imrpovement by this treatment. But on comparison there is no significant result in Gridrasi. The process of murchana is not having much significance in the treatment of Gridrasi. In the clinical study there is no much difference is obtained by murchana process of ksheerabala taila.

CONCLUSION

Sneha kalpas are those which contain both fat soluble and water soluble active principles.[8],[9]Murchana is a special pharmaceutical procedure done prior to the sneha siddha kalpana.[10] References are not found in vedas and brihatrayees, descriptions are available in Bhaishajya Ratnavali, Yoga ratnakara etc. Pharmaceutical procedure reveals that the duration

for the preparation of KMTT (Murchita Ksheerabala Thaila) is less and also there is less percentage of oil loss at the end.

Organoleptic characters of the samples revealed that, KMTT imparts good red colour, aromatic odour, and astringent taste due to the murchana samskara. Amadoshaharatwa is obtained by murchana samskara. Murchana enhances the absorption capacity and chemical stability of the oil. Physico chemical parameters describes that pH of KMTT is very ideal and acceptable to the body than other samples and increased specific gravity indicates the addition of active principles from murchana dravya to the oil. More refractive index is due to the phytoconstituents of murchana dravya.

Increased acid value in KMTT suggests that the decreased percentage of FFA. And decreased Iodine value in KMTT suggests the decreased degree of unsaturation. In both the above cases chances of rancidity is less. That means murchana samskara can increase the shelf life of the preparation. Increased ester value and peroxide value is an indicative for less rancidity. Loss on drying is less in KMTT than KTT it indicates that chances of less microbial contamination and spoilage.

Increased saponification value is favourable to the quick absorption and more absorption of oil into the system. Rate of absorption depends upon the viscosity also. So ultimately murchana samskara can increase the absorption capacity of oil and absorption into the system also. Ash value of KMTT is more compared to KTT. It indicates that increased percentage of inorganic contents.

In HPTLC profile also detailed study by using various combination of solvents become essential to get a proper interference. Sahacharadi kashaya contains the main ingredients sahachara, devadaru and nagara, it acts on vata and kapha dosha which shows its action on both variants of Gridrasi. Ksheerabala taila contains bala as the main drug. It is commonly used in vatavyadhi conditions. The individual groups A and B are showing statistically significant results proving that sahacharadi kwatha with Ksheerabala taila (Murchita and Amurchita) are effective in Gridhrasi. But on comparison both the groups showed insignificant results indicating that the treatment modalities are identical in Gridrasi.

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