Research Article
AMERICAN JOURNAL OF PHARMACY AND HEALTH RESEARCH
www.ajphr.com
2015, Volume 3, Issue 3
ISSN: 2321–3647(online)

Clinical Evaluation of Efficacy of *Kamalanaalkshara* in the Management of *Grathitaraktapitta* W.S.R to Deep Vein Thrombosis

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ABSTRACT

The study was conducted in 45 clinically diagnosed patients of *Grathita* condition of *Raktapitta*[1,3]with respect to deep vein thrombosis. These patients were divided into three groups of 15 patients each as Group A ,Group B, Group C. Patients of group A were recommended injection Heparin 5000 IU 8hrly by intravenous route according to weight and severity of the disease, Patient of group B were administered *KamalanaalKshara* in the dose of 500mg BD for 30 days with *Anupana* of *Madhu* and *Ghrita* in an unequal quantity and Patients of Group C were recommended with both injection Heparin 5000 IU 8hrly by intravenous route as well *KamalanaalKshara* in the dose of 500mg BD with *Anupana* of *Madhu* and *Ghrita* in an unequal dose simultaneously. It was observed that the patients of Group C treated with injection Heparin and *KamalanaalKshara* showed maximum percentage of symptomatic improvement i.e. it showed highly significant values for four parameter whereas in Group B , it was highly significant for 3 parameter, significant for one parameter and that of Group A, it was highly significant for 3 parameters.Present clinical study involved administration of *Kshara*, so to check out there any subjective disturbance going on, for that author studied the parameters for subjective improvement as in *CH.VI.8* (*Rogibala Pariksha*), they were also found significant.

Keywords: -*GrathitaRaktapitta, KamalanaalKshara,* Deep vein Thrombosis, *Madhu* and *Ghrita*

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Received 08 February 2015, Accepted 23 February 2015

Please cite this article as: Kadam KN, Clinical Evaluation of Efficacy of *Kamalanaalkshara* in the Management of *Grathitaraktapitta* W.S.R to Deep Vein Thrombosis. American Journal of Pharmacy & Health Research 2015.

INTRODUCTION

Day today burning competition, fast running life, changed dietary habits, inappropriate sleep, unhealthy life style, increased workload, all these ultimately leads to the physical, mental and psycho-somatic disorders. These facts reduce our potentials and promote us for use of allopathic medicines. All these things start creating disturbances in circulatory flow of blood, leading to thrombosis. Thrombotic condition of blood is the stages of disorder from mild to life threatening stage. It requires use of allopathic medicines over long term duration with lot of side effects or surgical procedures as a part of treatment. An eternal science, *Ayurveda* includes ancient sages of assertive knowledge are written the facts. These fundamental facts greatly need the support of scientific approach through modern investigative measures and their proof for curative purpose applying them on human being. Remembering all these things, I had undertaken the present research work and tried to highlight on one of the fundamental fact in *Charaka Samhita.*[1,2] *Acharaya Charaka* quoted in *Chaturtha Adhyaya* of *Chikitsasthan* that whenever *Raktapitta* get *anubandha* (interruption) by *Kapha* the condition is termed as *Grathita* stage of *Raktapitta*. Accordingly *Acharaya Charaka*, such stage can be managed by *Kshara* of *Kamalanaal*. To overcome on the *Grathita* state of *Rakta*, to remove obstruction or interruption from blood we can use *Kshara* of *Kamala*naal in it. [1,2]To highlight these concepts through aspects of modern science, I had selected one of the Thrombotic conditions of blood i.e. Deep vein thrombosis and had possibly correlated with *Grathita* state of *Raktapitta*. To prove the efficacy of the drug *KamalanaalKshara*, I selected 45 patients suffering from the disease Deep vein Thrombosis and observed them on etiopathological aspect through various subjective and objective parameters with respect to *Grathita* state of *Raktapitta*.Deep vein thrombosis occurring in leg is one of the most common pathological conditions among a lot of Thrombotic condition of venous system. It is an important public health problem[23].Each year 600000 patients will experiences VTE, at least 50000 and perhaps as many as 200000 patients will die from blood clots that obstruct blood flow to their lungs (Pulmonary Embolism). So to the prime aim of the undertaking the present research study was to find out solution over modern emergencies and life threatening condition like thrombosis through classical *Ayurvedic* formulations like *KamalanaalKshara* which will definitely provide assurance for curing disease, saving life, not hazardous for body and economical.

Aims and Objectives

Clinical Evaluation of Efficacy of *KamalanaalKshara* in the Management of Deep vein

thrombosis on various scientific parameters. To rule out the mechanism of action of *Kamalanaal Kshara* and its use in *GrathitaRaktapitta*.

MATERIALS AND METHOD

Following materials and methods were adopted for conducting the present clinical trial

Selection and preparation of drug *KamalanaalKshara*

The pharmacodynamics of drug *Kamala* according to *Ayurvedic* texts[16,17] are- *GuruGuna,MadhuraRasa*, *MadhuraVipaka* and *Sheet*a*Viryatmaka*. But *Kshara* prepared from the Rhizome of *Kamala* got the property of burning and destructive in nature .It means the material is caustic. It gradually erodes *KaphaGuna* and brings it downwards.

The properties of *Anupana* used along with *KamalanaalKshara*.

Honey:[12,13,14]I

t is having property of *Chedi, Vranashodana*, and *Sandhaan; Ropana* helps in the metabolism of fat and scraps *Kapha*.

Ghrita:[12],[15]

It is best due to its *Samskaranuvartana* property i.e. power to assimilate the properties of the drug without leaving their own properties. It purifies all three types of *Dosha*.

Therefore for present research work capsules filled with drugs i.e. *Kamalnaalkshara* along with required quantities of *Madhu* and *Ghrita* (unequal parts) were used.

Drug	Botanical Name	Part Used	Preparation
Kamala	Nelumbo neuciferae	Rhizome	*Kshara*

Approximate quantity of *KamalanaalKshara* in one capsule was 500mg

Method of Perparation[8,18]

Wet *Kamalanaal* in quantity of 300kg was collected and made into pieces dried it completely under sunlight. Later on the material allowed to burn until it was completely converted into ash. The burning process was stopped when there was complete removal of black particles takes place. Water was added up to six times as that of weight of total ash. The ash was dissolved in it and kept pot overnight. Next day contents were rubbed on hand with water and solution filtered with three folded cloth for 21 times .Then the filtered liquid allowed to heat on *Mandagni* until complete evaporation of water takes place the remaining white part in the pot is termed as *Kshara* of *Kamalanaal*.

Administration of drugs and treatment Schedule:

45 registered clinically diagnosed and confirmed patients of *GrathitaRaktapitta* (DVT) were divided randomly in the following three groups of 15 patients each.

Group A (Control group)

15 registered patients of DVT were administered injection Heparin 5000 IU 8 hrly by IV route according to weight and severity of disease.

Group B (Treated group)

15 registered patients of DVT were administered *KamalanaalKshara* in the dose of 500mg BD for 30 days with *Anupana* of *Madhu* and *Ghrita* in unequal dose.

Group C (Mixed group)

15 registered patients of DVT were recommended both injection Heparin 5000 IU 8 hrly by IV route according to weight and severity of disease of the patient as well *KamalanaalKshara* in the dose of 500mg BD for 30 days with *Anupana* of *Madhu* and *Ghrita* in unequal dose.

Selection of cases

The study recruited a population of 45 clinically as well by laboratory method diagnosed patients of DVT and those willing to take *Ayurvedic* formulation were selected.

Source

OPD/IPD unit of PG Department of *Roga Nidana* NIA Jaipur

OPD/IPD wing of surgery Dept of SMS Medical Hospital Jaipur.

Duration of Trial: 30 Days

A regular record of the assessment of all patients was maintained according to a special Performa prepared for the purpose.

Inclusion Criteria

1. Patients with typical clinical findings suggestive of DVT and carried sophisticated investigation like colour Doppler with indication of DVT.
2. Patients in the age group 20-60 years of either sex.
3. All patients of DVT without any significant complications

Exclusion criteria

1. Bleeding disorders, Thrombocytopenia.
2. Severe Hypertension (Risk of cerebral haemorrhages)
3. Threatened abortion
4. Pregnancy
5. Large malignancies
6. Tuberculosis
7. Chronic alcoholics
8. Liver Cirrhosis

9. Renal failure

10. Ocular and Neurosurgery, Lumbar puncture

Criteria of Assessment:

Criteria for diagnosis of DVT

Criteria for assessment of clinical improvement

Criteria for diagnosis of DVT

In 2006, Scarvelis and Wells over viewed a set of clinical prediction rules for DVT, called as

Wells score or criteria

S. No	Criteria	Score
1.	Active cancer treatment within last 6 months or palliative	1 point
2.	Calf swelling >3 cm compared to other calf	1 point
3.	Collateral superficial veins (non-varicose)	1 point
4.	Swelling of entire leg	1 point
5.	Localized pain along distribution of deep venous system	1 point
6.	Paralysis, paresis or recent cast immobilization of lower extremities	1 point
7.	Recently bedridden >3 days, or major surgery requiring or general anaesthetic in past 12 week	1 point
8.	Previously documented DVT	1 point
9.	Alternative diagnosis at least as likely	Subtract 2 points

Interpretation

1. Score of 2 or higher – Deep vein thrombosis is likely.

2. Score of less than 2 – Deep vein thrombosis is unlikely.

Criteria for assessment of clinical improvement

Both subjective and objective parameters were employed for assessment of the impact of the treatment produced in respective groups.

Subjective Improvement

Present Research work consists of administration of *Kshara* to the patient for one month. So all the patients under trial were specially asked and observed for any changes or improvement in their growing feeling of well-being produced if any and their clinical manifestations produced by the drug under trial. The basis of this assessment was done on *Rogibala Pariksha* as mentioned in ***CH.NI.8/32-37,CH.VI.8/89***

Following parameters were looked into as a part of subjective improvement

Svara varna yoga (Revitalization of speech and lustre)

Sharir upchaya (Body mass weight)

Bala (Body strength)

Abhyavaharan abhilasha (Desire of food)

Sukhen kala pratibodhanam (Feeling of well-being)

Vata purisha pravritti

Mutra pravriti

Shukra pravritti

Clinical improvement[22,23]

Following signs and symptoms were looked into before and after to the course of therapy for any improvement:

Redness over legs

Dull aching pain / nagging pain

Forearm / Calf tenderness

Low grade fever

Swelling (circumference of limb below 3 inches of joint)

Discoloration

Phlegmasia Alba Dolens

Phlegmasia Cerula Dolens

Objective Assessment[24,25]

Following investigation were carried out before and after the clinical trial to rule out some underlying disease:

Hb%, CT, BT, TLC, DLC, PT, APTT, TPLC

For the assessment of clinical improvements and severity of the symptoms following 'Symptom Rating Scale' developed by Dr. Piyush Mehta and Dr.K.C. Gupta et al. was used.

Table 1: Showing Symptom Rating Scale

Sr.No.	Grade	Percentage	Score	Sign of Grade
1	Nil	0	0	-
2	Mild	25	1	+
3	Moderate	50	2	++
4	Severe	75	3	+++
5	Agonizing	100	4	++++

RESULTS AND DISCUSSION

The clinical studies carried out in the present series of patients have revealed the majority of these cases were of age group 41 to 50 yrs (42.22%), Hindu (91%), Female(60%), Married(96%), 40 patients (88%) belonged to *Jangala* Habitat. Out of 45 patients 31 patients (68.8%) were of *PittaKapha*ja *Prakriti*, 33 patients (73.3%) were with *Mandagni*, the incidence of involvement of extremity among 45 patients was with upper extremity (100%), Right involvement 63% and occurrence with calf vein thrombosis was found in 41 patients i.e. 91%.

Subjective and Clinical improvement[26]

After the completion of therapeutic trial the improvement observed in the clinical features and feeling of well-being in all the three groups are described in table number 2, 3, 4

Table 2: Showing the pattern of Clinical recovery in 14 registered patients of DVT Group-A

Symptoms	Variable	Observations	Mean	Mean Diff	Mean%	SD	P-Value	Result
Redness	3	8	2.375	1.000	42.100	0.518	0.006	HS
	2	8	1.375			0.518		
Pain	3	13	2.615	1.308	50.000	0.506	0.001	HS
	1	13	1.308			0.480		
AlbaDolens	ND	-	-	-	-	-	-	ND
CerulaDolens	2	5	2.200	0.600	27.300	0.447	0.278	IS
	2	5	1.600			0.548		
Discoloration	2	12	2.167	0.333	15.400	0.718	0.434	IS
	1	12	1.833			0.835		
Calf Tenderness	3	13	2.462	1.154	46.900	0.519	0.001	HS
	1	13	1.308			0.480		
Svaravarna Yoga	2	13	1.692	0.615	36.400	0.751	0.008	HS
	1	13	1.077			0.760		
Bala	3	13	1.846	0.846	45.800	0.801	0.004	HS
	2	13	1.000			0.816		
Abhayavarharana	2	13	1.615	0.462	28.600	0.768	0.031	S
	1	13	1.154			0.376		
Vatapurisha	1	13	1.000	0.615	61.500	0.707	0.005	HS
Mukti	0	13	0.385			0.506		
Mutra pravriti	1	13	0.308	0.154	50.000	0.480	0.092	S
	0	13	0.154			0.376		
Shukra pravriti	0	7	0.286	0.143	50.000	0.488	0.285	IS
	0	7	0.143			0.378		
Sukhena Kala	2	13	1.308	0.538	41.200	0.480	0.008	
Pratibohanama	1	13	0.769			0.599		HS

Table 3: Showing the pattern of Clinical recovery in 14 registered patients of DVT Group-B

Symptoms	Variable	Observations	Mean	Mean Diff	Mean%	SD	P-Value	Result
Redness	1	6	2.000	1.167	58.300	1.095	0.042	
	0	6	0.833			0.753		S
Pain	3	13	2.692	1.538	57.100	0.630	0.001	HS
	1	13	1.154			0.555		
Alba Dolens	1	4	2.500	0.250	10.000	1.000	1.000	IS
Cerula Dolens	1	5	2.000	0.800	40.000	0.707	0.286	IS
	1	4	2.250			0.957		
Discoloration	2	13	2.154	1.000	46.400	0.689	0.001	HS
	0	5	1.200			0.837		
Calf Tenderness	2	13	2.538	1.385	54.500	0.660	0.001	
	1	13	1.154			0.555		HS
Svaravarna Yoga	2	13	1.538	0.385	25.000	0.660	0.063	
	1	13	1.154			0.376		S
Bala	2	13	1.769	0.538	30.400	0.832	0.031	S
	1	13	1.231			0.439		
Abhayavarharana	2	13	1.308	0.692	52.900	0.855	0.008	HS
	1	13	0.615			0.650		
Vatapurisha	2	13	1.077	0.769	71.400	0.760	0.002	HS
Mukti	1	13	0.308			0.480		
Mutra pravriti	0	13	0.154	0.077	50.000	0.376	0.019	S
	0	13	0.077			0.277		
Shukra pravriti	0	4	0.500	0.500	100.000	0.577	0.221	IS
	0	4	0.000			0.000		
Sukhena Kala	2	13	1.308	0.538	41.200	0.480	0.008	HS
Pratibohanama	1	13	0.769			0.439		

Table 4: Showing the pattern of Clinical recovery in 13 registered patients of DVT Group-C

Symptoms	Variable	Observations	Mean	Mean Diff	Mean%	SD	P-Value	Result
Redness	1	12	1.667	1.333	80.000	0.492	0.002	HS
	0	12	0.333			0.492		
Pain	2	12	2.167	1.333	61.500	0.718	0.002	HS
	0	12	0.833			0.718		
Alba Dolens	1	5	1.600	0.400	25.000	0.548	0.197	IS
	0	5	1.200			0.447		
Cerula Dolens	1	5	1.400	0.400	28.600	0.548	0.643	IS
	0	5	1.000			0.707		
Discoloration	2	12	2.250	1.417	63.000	0.866	0.001	HS
	0	12	0.833			0.718		
Calf Tenderness	3	12	1.833	1.083	59.100	0.718	0.004	HS
	1	12	0.750			0.754		
Svaravarna Yoga	2	12	2.167	0.833	38.500	0.835	0.004	HS
	1	12	1.333			0.492		

Bala	2	12	1.750	0.333	19.000	0.866	0.125	Is
	1	12	1.417			0.669		
Abhayavarharana	2	12	1.833	0.667	36.400	0.937	0.008	HS
	1	12	1.167			1.030		
VatapurishaMukti	2	12	1.167	0.667	57.100	0.718	0.005	HS
	1	12	0.500			0.522		
Mutra pravriti	0	12	0.333	0.250	75.000	0.492	0.066	S
	0	12	0.083			0.289		
Shukra pravriti	0	5	0.400	0.000	0.000	0.894	1.000	IS
	0	5	0.400			0.894		
Sukhena Kala	1	12	0.750	0.333	44.400	0.622	0.040	S
Pratibohanama	0	12	0.417			0.515		

Objective parameters

The objective parameters in laboratory investigation of DVT in 45 patients of all the three groups are described in table number 5, 6 and 7.

Table 5: Showing the Laboratory changes in 14 registered patients of DVT Group- A

Symptoms	Mean		Dif.	% of Change	SD	SE	T	P	Results
	BT	AT							
HB	11.00	11.57	0.57	5.19	0.33	0.09	6.45	>0.001	HS
TLC	7221.43	7550.00	328.57	4.55	286.70	76.62	4.29	>0.001	HS
N	55.00	56.64	1.64	2.99	1.42	0.38	4.32	>0.001	HS
L	33.36	32.93	0.43	1.28	6.09	1.63	0.26	<0.1	IS
E	4.21	4.50	0.29	6.78	0.83	0.22	1.30	<0.1	IS
M	2.29	2.00	0.29	12.50	0.73	0.19	1.47	<0.1	IS
B	0.00	0.07	0.07		0.27	0.07	1.00	<0.1	IS
TPLC	1.41	1.46	0.04	3.03	0.06	0.02	2.48	>0.02	S
CT	7.14	7.14	0.00	0.00	0.94	0.25	0.00	ND	ND
BT	3.79	3.29	0.50	13.21	0.76	0.20	2.46	>0.02	S
PT	17.14	16.79	0.36	2.08	1.15	0.31	1.16	<0.1	IS
APTT	43.14	43.07	0.07	0.17	1	0.27	0.27	<0.1	IS

Table 6: Showing the Laboratory changes in 13 registered patients of DVT Group- B

Symptoms	N	Mean		Dif.	% of Change	SD	SE	T	P	Results
		BT	AT							
HB	14	9.95	10.38	0.43	4.31	0.43	0.12	3.71	>0.01	S
TLC	14	6785.71	6871.43	85.71	1.26	282.45	75.49	1.14	<0.1	IS
N	14	55.14	56.79	1.64	2.98	1.30	0.35	4.73	>0.001	HS
L	14	29.07	31.14	2.07	7.13	1.82	0.49	4.27	>0.001	HS
E	14	3.64	3.86	0.21	5.88	0.58	0.15	1.38	<0.1	IS
M	14	2.36	2.29	0.07	3.03	0.92	0.25	0.29	<0.1	IS
B	14	0.07	0.14	0.07	100.00	0.47	0.13	0.56	<0.1	IS
TPLC	14	1.46	1.45	0.01	0.49	0.10	0.03	0.27	<0.1	IS
CT	14	6.43	6.14	0.29	4.44	0.73	0.19	1.47	<0.1	IS
BT	14	3.50	3.29	0.21	6.12	0.70	0.19	1.15	<0.1	IS
PT	14	17.29	16.14	1.14	6.61	0.53	0.14	8	>0.001	HS

APTT	14	36.36	35.71	0.64	1.77	1.78	0.48	1.35	<0.1	IS

Table 7: Showing the Laboratory changes in 13 registered patients of DVT Group- C

Symptoms	N	Mean		Dif.	% of Change	SD	SE	T	p	Results
		BT	AT							
HB	13	10.35	11.31	0.96	9.29	1.25	0.35	2.77	>0.01	S
TLC	13	7061.54	7438.46	376.92	5.34	271.27	75.24	5.01	>0.001	HS
N	13	54.46	56.08	1.62	2.97	1.39	0.38	4.20	>0.01	S
L	13	32.46	33.31	0.85	2.61	3.11	0.86	0.98	<0.1	IS
E	13	4.31	4.62	0.31	7.14	0.85	0.24	1.30	<0.1	IS
M	13	2.62	2.38	0.23	8.82	0.83	0.23	1.00	<0.1	IS
B	13	0.00	0.00	0.00		0.00	0.00		ND	ND
TPLC	13	1.39	1.42	0.02	1.66	0.08	0.02	1.00	<0.1	IS
CT	13	7.08	7.12	0.04	0.54	1.14	0.32	0.12	<0.1	IS
BT	13	3.65	3.25	0.41	11.16	1.03	0.29	1.42	<0.1	IS
PT	13	16	15	0.93	5.8	1	0.28	3.36	>0.05	S
APTT	13	36.38	36.08	0.31	0.85	1.65	0.46	0.67	<0.1	IS

Table 8: Showing the percentage of Symptomatic improvement in 41 registered patients in all the three Groups[26]

Symptoms	Group A	Group B	Group C
Redness	42.10%	58.30%	80.00%
Pain	50.00%	57.10%	61.50%
Alba dolens	00.00%	10.00%	25.00%
Ceruladolens	27.30%	40.00%	28.60%
Tenderness	46.90%	54.50%	59.10%
Discoloration	15.40%	46.40%	63.00%
Fever	1 %	1.11%	0.9%
Swelling	1.3%	1.58%	1.3%

Table 9: Showing intergroup comparison of signs and symptoms by KruskalWallis test[26]

Symptoms	Total observ	Df	t	P	Results
Redness On Legs	28	2	1.359227	0.3029	IS
Dull aching pain	41	2	0.530861	0.7099	IS
Phleg Albadolens	18	2	1.263158	0.4135	IS
Tenderness	41	2	0.71218	0.5668	IS
Discoloration	40	2	14.383074	0.0001	HS
Svaravarna Yoga	41	2	2.858292	0.1451	IS
Bala	41	2	2.959299	0.1577	IS
Abhayavarharana	41	2	0.68553	0.6342	IS
Vatapurish Mukti	41	2	0.430926	0.707	IS
Mutra Mukti	41	2	0.619309	0.4826	IS
Shukra Mukti	19	2	1.28625	0.2003	IS
SukhenaPratibohanama	41	2	0.698195	0.6278	IS

The statistical data of the present research work showed that maximum patients of DVT registered were between 41 to 50 years i.e. fifth decades of life 42.22%. According to the modern

medicine DVT can occur at all ages but incidence is more in between 41 to 50 years of age (Kniffin WD Arcts. Intermed. 1997) *Ayurvedic* principles in the above said *Vaya* there is vitiation of *Pitta, Kapha* and *Raktadosha* which in turns leads to vitiation of *Agni* which is roof cause of occurrence of DVT. The incidence of disease majority was found in Hindu patients (91%) this was probably due to reason that area of selection of patients was situated in Hindu predominant society. The series of registered patients of DVT involved 35.56% of housewife because of their nature of work. In kitchen most of the women are bound to work in standing position for long hours which puts pressure and strain on their legs. Maximum number of patients of DVT i.e. 35.56% was suffering more than 2 years followed by 24.44% patients found chronic history of more than 4 years which concludes that DVT is a chronic disorder with long standing duration. Analytical study of these factors revealed that maximum number of patients of DVT was *Mandagni* (73.33%) and *Avara* type of *Aharashakti* (78.78%) which suggests the predominance of *Pitta* and *Kaphadosha* in the occurrence of the disease. In *Sharirika Prakriti, Pitta Kaphaja Prakriti* patients with *GrathitaRaktapitta* dominated the series.All the cases registered for present clinical trial had found total 100% of patients were to be affected with lower extremities. Maximum number of patients was affected by left lower legs i.e. 62.22% incidence was found. Involvement of site of disease in maximum number of patients were found at calf vein thrombosis i.e. 91.11%

Symptomatic Improvement

The symptomatic relief was noted to be maximum in patient of Group C, moderate in patients of Group 2nd and comparatively less in group A, which is a clear cut indication that *Ayurvedic* formulations are quite effective in the management of DVT. The drug of *Ayurveda* ic formulation *KamalanaalKshara* have the potential action like that of modern drug Heparin but also having *Deepana, Pachana, Stroto shodhan*, properties digests *Ama Dosha*also improves *Jatharagni* and removes *Rasa*raktagata *Ama*. That means drug acts different levels of *Agni*. It corrects the vitiation of *Doshas*, which is responsible for pathogenesis of DVT, thus checking and controlling the disease DVT.

Subjective Improvement

The parameters taken for assessing mental and physical fitness of patients, out of them- *Vata-Purisha-Mutra* and *Shukra pravritti* parameters selected to assess the effect of *Kshara*, that is to check whether it alters normal physiology of body. But results found were significant. Therefore the drug may use safely in present disease. *Vata Purisha Pravritti* showed significant results that mean, there is improvement in the *Agnimandya*.

Laboratory parameters

Significant results found for parameters like Hb%, Neutrophil, TLC shows process of recovering state of infection with improvement of status of *Agni*. This ultimately leads to formation of proper *RasaRakta* with removal of *Rasa*gata *Kapha*dushti. But inter-group comparison of the three groups showed insignificant results, i.e. not much difference in results exits among these groups for laboratory parameters. At the same time results for CT, BT, PT, TPLC were found significant, interpreting that the therapy was well regulated for the avoidance of bleeding, during the course of treatment

Probable mode of action of drug[19,20,21]

The drug selected for the present trial was *Kamanaala* in *Kshara* form. The selection criteria of drug for research project is the basic reference of classics of *Charaka Samhita* along with the properties i.e. Anti-inflammatory, Anti-oxidant, *Tridoshaghna*. The drug *Kamalanaal* has *Sheeta*, *Ruksha*, *Dahaghna* properties with *MadhuraRasa*, *Vipaka* and *SheetaVirya*[7,10,11]. With these properties when it was converted into *Kshara* form it became like alkali, *Tikshna*, *Ushna*, *Laghu, Ruksha, Pakta, Vidarana, Dahakaraka, Dipana, Chedana,* Salty and Pungent. The *Grathita* state of *Rakta* is formed due to *RasaRakta*gata *Kaphavriddhi* increasing predominance of *Manda, Sthira, Picchila,Guru* etc *Guna*s.

Following characteristics of *KamalanaalKshara* were found which are of opposite nature to that of state of *GrathitaRaktapitta*, played an important role in breakdown the pathogenesis of the disease-

S. No.	Character	***GrathitaRaktapitta***[3,4,5]	***KamalanaalKshara***
1.	*Mahabhuta*	*Prithvi + Jala*	*Agni*
2.	*Dosha*	*TriDosha*↑	*TriDosha*↓
3.	*Guna*	*Manda, Sthira, Guru, Picchila*	*Tikshna, Ushna, Laghu, Pakta, Ruksha*
4.	*Karma*	*Rasagata- Kapha*↑ *Raktagata – Ama* ↑	*Deepan, Pachana, Vilayana, Shodhana*

Besides these, it has potency for **burning.** Other properties

Pachana[6,9] – It acts as Pachana, the former as suppurative in case of inflammation and the later as **digestive in case of indigestion.**

Vilayana[6,9]– It **dissolves swelling** i.e. obstruction, caused predominantly by *Vata* and *Kapha*.

Shodhana[6,9]– Cleansing of directly wounds.

Rohana[6,9]**-** Healing for **cleaning wounds** because of the specific action of compound formulation.

With chemical analysis of *Kamalanalkshara* showed the chemical constituent as that of **natural occurring *Kshara* Na, K, Ca** in an decreasing order. Thus with these properties and chemical constituents, practically used *KamalanaalKshara*proved for its Thrombolytic and **Anticoagulant action** in decided dose and time period.

CONCLUSION

Following conclusion was drawn from current research project

1. With the help of modern techniques use of *KamalanaalKshara* is the best solution over *Grathita* state of *Rakta* (thrombosis)[1,2]

2. Drug proved its effective Anticoagulant action in the decided dose and time period rather than the thrombolytic effect.

3. The drug is proved 90% of its action for getting symptomatic relief in patients of Deep Vein Thrombosis.

4. The drug is found effective than heparin in aspect of its side effects, recurrence, cost effective.

5. Therefore it can be concluded that *KamanaalKshara* along with *Anupana* of *Madhu* and *Ghrita*[1,3] is effective treatment modality in chronic and complicated states of thrombosis and as an Anticoagulant agent.

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