

ROLE OF SHIGRU BIJA TAILA IN ABHIGHATAJ SOPHA W.S.R. TO TRAUMATIC INFLAMMATION –A CLINICAL STUDY

Uttam Kumar¹, M.K.Shringi², Narindar Singh³, Rajesh Urmale⁴

¹MS (Ayu.), Scholar, ²HOD & Proffesor, ³Lecturer

P.G.Deptt. of Shalya Tantra , NIA, Amer Road,Jaipur, Rajasthan, India

⁴Lecturer, Rasashastra & Bhasajya kalpana, Rajiv Gandhi Ayurved College, Trilanga, Bhopal, Madhya Pradesh, India

ABSTRACT

In today's life style traumatic injuries are more common and these injuries manifest as pain and swelling in involved tissues. Management of these injuries in modern science involves mainly prescription of non-steroidal anti inflammatory drugs/ opoids / steroids etc. Management of these injuries, by these drugs often associated with adverse effects in body of sufferer. Ability of *Ayurveda* to provide effective treatments for various diseases with minimal adverse effects is a reason, why there is global trend now a day's towards adopting *Ayurvedic* methods for treating disease entities. Hence present study was planned for the management of *Abhigataja shopha*/Traumatic inflammation by *Ayurvedic* preparations i.e. *Shigru guggulu* & *Shigru bija taila*. Results of the study were encouraging and it is concluded that *Ayurvedic* management is effective and having no adverse effects on the patients under clinical trial.

Keywords: *Shigru guggulu, Shigru bija taila. Abhighataja Shopha*

INTRODUCTION

Inflammation was also a cause of surgeon's distress in ancient time as well as today because every inflammatory lesion either goes towards resolution or bursting, leading to an open wound. In another words, it can be said that entire attention of ancient surgery revolves on shopha (Inflammation), because when a *vrana* (wound) is associated with *shopha*, it is called as "*Vrana shopha*" (the most burning topic of ancient surgery) except the accidental *vranas* (wounds) ,where the wound later associated with *shopha*^[1]. In *Ayurveda* the process of inflammation is known as "*Shopha*" .this is generally because of contaminated *vata dosha* entity, and *kapha* and *pitta doshas* are involved in this^[2]. The sign and symptoms are differ-

entiated upon the acuteness of signs relating to *vata, pitta* and *kapha dosha*.The basic line of treatment for the *shopha* is of *sanshaman* and *shodhan chikitsa*. The patient is treated by the local application of medicines as well as oral therapy of *vata* and *vednashamak* drugs^[3]. According to modern science the process of inflammation is a natural phenomenon of combating the exertion due to mechanical and traumatic impact^[4].

In the process of inflammation the W.B.C. of body combat the foreign particles ,so as to protect the body This aggregation of chemicals and increased blood supply makes that particular area swollen and sometimes temperature rise is also noticed. This process results in inflamma-

tion and also cause pain^[5]. Inflammation possesses the following signs:^[6]Pain (Dolar), Heat (Calor), Redness (Rubor), Swelling (Tumor), Loss of function (Functio laesa). The role of keeping the *doshas* in balancing state requires a management with anti-inflammatory drugs. Therefore the Inflammation as a whole is a fertile subject, whose taming is necessary for a surgeon. Most of the diseases are associated with inflammatory changes. So, therefore the history of inflammation can easily be said as the history of pathology.

In general the classification of anti-inflammatory drugs mentioned in the *Ayurvedic* texts has been made according to their therapeutic action. The drugs mentioned for various pathologies, either suppurative or non-suppurative belongs to different ganas such as: *shothahara gana*, *vraha shothahara gana* *vishagna dravyas* (for allergic inflammatory conditions) etc. The route of administration is the systemic one, whereas, in certain inflammatory conditions only local application of anti-inflammatory drugs have been advised. Such as: *dashanga lepa*, *pancha valkal kwatha* sitz bath, to reduce the inflammation as well as arrest the inflammatory process in its initial stage, so that stage of suppuration is avoided.

Traumatic Inflammation is one of the common disease facing by human beings and the allopathic treatment included NSAIDs, analgesics and steroids is costly and having many adverse effects in the body, such as: nausea, vomiting and gastritis^[7] etc. In *Abhighataja Shopha* as the predominated *doshas* are *vata* and *kapha*, which causes pain and swelling, and the selected drugs *Shigru guggulu* and *Shigru bija taila*, which are having properties, to pacify the *vata* and *kapha*. So in this trial an effort has been done to develop a cost

effective management for *Abhighataja Shopha*.

In the present study the drugs *Shigru guggulu* and *Shigru bija taila*, which are found to possess the anti inflammatory and analgesic effect^[8]. Hence they have been selected as the trial drugs for clinical evaluation in patients of *Abhighataja shopha* (Traumatic inflammation).

AIMS AND OBJECTIVES:

- To evaluate the efficacy of *Shigru bija taila* as a local application in *Abhighataja Shopha*.
- To study the comparative efficacy of *Shigru guggulu* and *Shigru bija taila* in *Abhighataja Shopha*.
- To study the synergistic effect of *Shigru guggulu* along with local application of *Shigru bija taila* in *Abhighataja Shopha*.
- To establish the *Ayurvedic* treatise in the management of Traumatic inflammation.
- -To seek a cost effective treatment for Traumatic Inflammation.

MATERIAL AND METHODS: Following material and methods were adopted for the completion of current research work.

1-Selection of cases: 30 Patients suffering from traumatic inflammation with cardinal sign and symptoms were selected randomly irrespective of their age, sex, education etc. from the O.P.D. and I.P.D. section of National Institute of Ayurveda Jaipur.

A-Inclusion criteria:

- Patients aged between 10-60 years of either sex.
- Patients with classical sign and symptoms of traumatic inflammation.
- Traumatic inflammation of forearm, hand, fingers, leg, foot and their respective joints were taken.

B-Exclusion criteria:

- Patients below the age of 10 years and above 60 years.

- Traumatic inflammation with suppur added infection.
- Traumatic Inflammation associated with systemic disease such as; congestive heart disease, nephrotic syndrome, diabetes mellitus and tuberculosis etc.
- Multiple skeletal injuries.
- Patient taking any other treatment for traumatic inflammation.
- HIV and HBsAg positive patients.

C- Discontinuation criteria:

- Any adverse effect of therapy, if seen.
- Patient not willing to continue the treatment.
- Due to any acute or severe illness that requires any other management.

2-Diagnostic criteria:

All the patients were diagnosed on the basis of following criteria-

A-Clinical symptoms and sign:

Following sign and symptoms were observed in patients for diagnosis.

- Pain.
- Swelling.
- Tenderness.
- Loss of function.
- Skin colour changes.
- Local temperature rise.

B-Investigations:

- Routine blood examination as-Hb gm%, TLC, DLC, ESR, B.Sugar, B.Urea, S.Creatinine and complete Urine examination. (To rule out any systemic disease)
- X-Ray.

Study Drugs:

The cause of selection of tab. *Shigru guggulu* was that, this drug is vigorously using in various inflammatory conditions in O.P.D. and I.P.D. section of shalya tantra department of B.H.U. Varanasi and has also been standardised by pharmacy of B.H.U. Varanasi in 1979 and firstly used by *Dr.Kulwant Singh* during his research work i.e. "*Clinical & experimental study on vrana shopha*". whereas *Shigru bija* oil

had got its reference from *Sushruta sutra sthan – 45/115*^[9], where *acharya Sushruta* has explained that *Shigru bija* oil is *tikshana* and *laghu* in *guna*, *ushana* in *virya*, *katu* in *rasa* and *katu* in *vipaka*, so it pacify the vitiated *vata* and *kapha doshas* (responsible for pain and oedema respectively) and destroy the *krimi* (worms), *kustha* (skin diseases), *prameha* (diabetes) and *shiro rogas*^[10].

MODE OF ADMINISTRATION OF DRUGS AND DOSE:

30 clinically diagnosed patients of traumatic inflammation were randomly divided into following three groups-

1-GROUP A: Standard Group: -

10 clinically diagnosed patients of Traumatic inflammation were registered and given 2 tabs of *Shigru guggulu* thrice daily with water for 3 weeks. The weight of each tab was 1 gm. In this way 6 gm drug was given per day.

2-GROUP B: Trial Group:- 10 clinically diagnosed patients of traumatic inflammation were registered and given *Shigru bija taila* for local application over the affected part by gentle massage for 3 weeks.

3-GROUP C: Combined Group: - 10 clinically diagnosed patients of traumatic inflammation were registered and given *Shigru guggulu* along with *Shigru bija taila*(Oil) i.e. combined therapy for 3 weeks.

Follow-up Study: All the Patients of three groups were weekly followed up to one month.

3. Assessment criteria:

The patients were assessed on the basis of subjective and objective parameters before and after treatment. **Pain on VAS:** In term of sufferer G 0 - No pain; G 1 - Pain appears after strenuous activity; G 2 - Persistent mild pain, not requiring analgesia; G 3 - Persistent moderate pain, requiring analgesia; G 4 – Severe pain, poorly respond-

ing to analgesia. **Swelling:** By comparison of circumferential measurement of affected part with corresponding healthy part. G 0 - No swelling; G 1- Up to 0.50 cm; G 2 - 0.50 cm - 1.00 cm; G 3 - 1.01 cm - 1.50 cm; G 4 - More than 1.50 cm. **Tenderness:** G 0 - No tenderness; G 1 - Pain on pressure but without any facial expression; G 2-Wincing of face on pressure; G 3-Wincing of face on pressure with withdrawal of affected part; G 4-Patient is not allowing touch due to extreme pain. **Loss of function:** G 0-No difficulty during work; G 1-Mild pain present but able to perform work; G 2-Local bearable pain during work; G 3-Difficulty in day today routine work due to extreme pain; G 4-Total loss of function. **Skin colour changes:** G 0-No any colour change; G1-Redish colouration; G 2-Redish bluish colouration; G 3-Redish blackish colouration.

Local temperature rise: The assessment of local temperature rise was done only up to 3 days after the traumatic injuries, by comparison of affected part with corresponding healthy part. G0-No variation in local temperature; G1-Variation up to 0.50C; G2-Variation up to 0.50C to 1.00C;G 3- Variations more than 10C. For

the purpose of the assessment of result some grade points were used considering the severity of different sign and symptoms and Clinical assessment of result was done as: Cure: hundred percent; maximum improvement: 75%to99%; moderate improvement: 50% to 74%; mild Improvement: 25% to 49% and no improvement: less them 25% improvement of the cardinal sign and symptoms, like pain, swelling, Tenderness, Loss of function, Skin colour changes, Local temperature rise.

All the patients were provided to take similar dietary regimen. The duration of treatment was 30 days in maximum. The clinical assessment was done in every 7 days interval. The initial findings were compared with the result of progressive 7th day, 14thday and so on of findings. Grading/ grouping according to the assessment criteria and measurement scale concerned to each item categorically differentiated the findings among the patients in the clinical study. And finally the assessment as a whole was presented in percent value.

OBSERVATION & RESULTS:

Table no.1: Demographic observations of total registered patients.

Findings	Predominance	Percentage
Age	16-30 yrs. Age group	63.33%
Sex	Male	86.67%
Religion	Hindu individuals	90.00%
Habitat	Urban area	100.00%
Marital status	Unmarried	53.33%
Educational status	Graduate	36.67%
Socio-economic status	Middle class	60.00%
Occupation	Student	53.33%
Dietary habits	Vegetarian	56.67%
Cause of trauma	Playing	46.67%
Site of trauma	Wrist joint	30.00%
Kostha	Madhyama	53.33%
Agni	Samagni	46.67%

Sharirik Prakriti	<i>Vata-Kaphaja & Pitta-Kaphaja equal</i>	36.67%
Satwa	<i>Madhyama</i>	73.33%
Sara	<i>Madhyama</i>	76.67%
Samhanana	<i>Madhyama</i>	63.33%
Ahara shakti	<i>Madhyama</i>	56.67%
Vyayama shakti	<i>Madhyama</i>	56.67%

Results after treatment:

Table no.-2 Effect of trial on subjective and objective parameters of group A

S.N.	Sign & symptoms	No of patients	Mean		Diff.	% of relief	SD	SE	t-value	p-value
			BT	AT						
1.	Pain	10	2.8	1.3	1.5	53.57%	0.527	0.167	9.00	<0.001
2.	Swelling	10	2.8	1.2	1.6	57.14%	0.698	0.221	7.23	<0.001
3.	Tenderness	10	3.1	1.5	1.6	51.61%	0.515	0.163	9.79	<0.001
4.	Loss of function	10	2.1	1.0	1.1	52.38%	0.568	0.180	6.12	<0.001
5.	Skin colour changes	10	1.3	0.6	0.7	53.84%	0.483	0.153	4.58	<0.01
6.	Local temperature rise	10	1.6	0.9	0.7	43.75%	0.483	0.153	4.58	<0.01

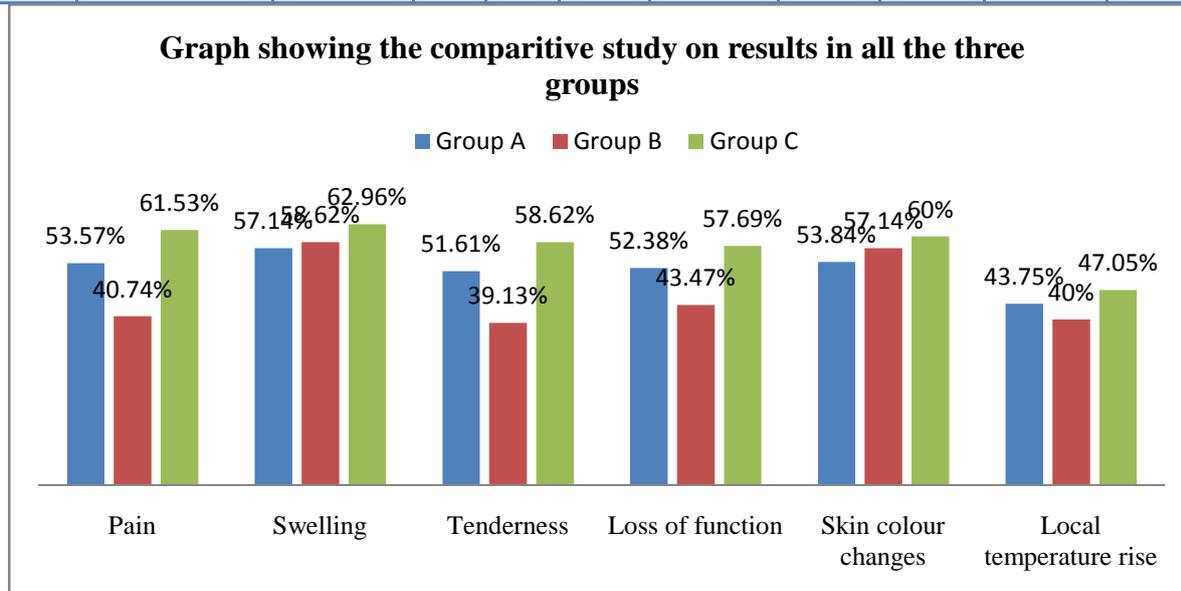
Table no.-3 Effect of trial on subjective and objective parameters of group B

S.N.	Sign & symptoms	No of patients	Mean		Diff.	% of relief	SD	SE	t-value	p-value
			BT	AT						
1.	Pain	10	2.7	1.6	1.1	40.74%	0.736	0.233	4.71	<0.01
2.	Swelling	10	2.9	1.2	1.7	58.62%	0.483	0.153	11.1	<0.001
3.	Tenderness	10	2.3	1.6	0.9	39.13%	0.483	0.153	4.58	<0.01
4.	Loss of function	10	2.3	1.3	1.0	43.47%	0.815	0.258	3.87	<0.01
5.	Skin colour changes	10	1.4	0.6	0.8	57.14%	0.420	0.133	6.00	<0.001
6.	Local temperature rise	10	1.5	0.9	0.6	40.00%	0.515	0.163	3.67	<0.01

Table no.-4 Effect of trial on subjective and objective parameters of group C

S.N.	Sign & symptoms	No of patients	Mean		Diff.	% of relief	SD	SE	t-value	p-value
			BT	AT						
1.	Pain	10	2.6	1.0	1.6	61.53%	0.515	0.163	9.79	<0.001
2.	Swelling	10	2.7	1.0	1.7	62.96%	0.673	0.213	7.96	<0.001
3.	Tenderness	10	2.9	1.2	1.7	58.62%	0.483	0.153	11.1	<0.001
4.	Loss of function	10	2.6	1.1	1.5	57.69%	0.527	0.167	9.00	<0.001
5.	Skin colour changes	10	1.5	0.6	0.9	60.00%	0.568	0.180	5.01	<0.001

6.	Local temperature rise	10	1.7	0.9	0.8	47.05%	0.420	0.133	6.00	<0.001
----	------------------------	----	-----	-----	-----	--------	-------	-------	------	--------



DISCUSSION

In the study, out of 30 patients, it was found that the maximum no. of patients were between 16-30 years of age group i.e. 19 patients (63.33%) which can be attributed to comparative more active life style in the age group 16-30 years & exposure to trauma. The data shows that the majority of patients in the present trial were males i.e. 26 patients (86.67%). It clearly supports the epidemiological data worldwide that males are more prone to soft tissue injuries due to various activities in life than females. In the present series of 30 registered cases, the affliction of the disease was found more in students i.e. 16 (53.33%). It is fact that, students generally have a greater tendency towards playing games rather than other activities. In this way, they are more prostrate to soft tissue injuries, and it may also called as sports injuries, which could be a topic of research alone. The data shows that all the 30 patients (100%) of the study were from the urban area. Perhaps it was due to the situation of hospital, where the study carried out, and urban population being more

prone to traffic injuries due to enhanced vehicular traffic in the cities. The data shows that most of the traumas i.e.14 (46.67%) was during playing. The data supports the occupational data of the study, where maximum no of patients were Students. It has been seen that students frequently participate in sports, that's why; soft tissue injuries are common in them. The data shows that, the parts which were selected for the study, the most involved part was the wrist joint i.e. 9 (30%). This could be because of, this is the part, which is most exposed for the injuries during activities like playing, driving & different domestic works etc.

EFFECT OF THERPY ON CARDINAL SIGN AND SYMPTOMS:

The *Shigru guggulu* was found more effective in subsiding the pain (53.57%), tenderness (51.61%), loss of function (52.38%) and local temperature rise (43.75%) than *Shigru bija* oil, while *Shigru bija* oil was found more effective in Subsiding the swelling (58.62%) and skin colour changes (57.14%) than *Shigru guggulu*, but when both the drugs were compared statistically, then it was found that both the drugs are equally effective

on all cardinal sign and symptoms of the disease. The *Shigru bija* oil was found efficacious on all cardinal signs and symptoms of Traumatic inflammation, but it was found more efficacious than *Shigru guggulu* on swelling (58.62%) and skin colour changes (57.14%). Its more effect on subsiding the swelling and bringing the normal colour of skin could be because of its strong *vatahara* and *kaphahara* properties and the gentle massage on effected area which is helpful in direct penetration of oil in the affected cells and tissues and it has antioxidants, vitamin A and C and also possess strong oxidative stability, that's why it is using cosmetically also. The mixed group was found to be most efficacious on all objectives and subjective parameters of the disease among all the three groups i.e. on pain (61.53%), swelling (62.96%), tenderness (58.62%), and loss of function (57.69%), skin colour changes (60.00%) and local temperature rise (47.05%).

It is very clear from the observations that although all the three groups have shown statistically significant improvement in all clinical sign and symptoms, but the percentage of improvement rather better in group C i.e. combined group, on all cardinal sign and symptoms than group A and group B.

DISCUSSION REGARDING PROBABLE MODE OF ACTION OF STUDY DRUGS:

The drug *Shigru*, when studied from *rasa*, *guna*, *virya* and *vipak*, point of view, then it becomes quite evident that all the properties possessed by *Shigru* are *vatahara* and *kaphahara*, as well as anti-inflammatory action is due to *ushna-virya*, *katu- vipaka*, *laghu* and *ruksha-Guna* and *tikta*, *katu-rasa*, because this drug pacify vitiated *vata dosha* by *ushana virya* and vitiated *kapha dosha* by all properties possess by the drug *Shigru*^[10]. *Tikta rasa* has a

drying effect on *kleda*, *vasa*, *meda*, *majja*, *lasika*, *puya*, *pitta* and *kapha*. It strengthens muscle and skin. These qualities of *tikta rasa* are due to *ruksha*, *sita* and *laghu guna*^[11]. *Katu rasa* stimulates digestive fire; destroy the contaminated and excited malas and *kleda* and works as vermicide. Due to *akasha mahabhuta*, it clears space and open channels, that's why; it is efficacious in destroying the *amadasha*, *abhisynnda*, obesity, excessive liquidity and obstruction in channels^[12]. The drug *Guggulu* when studied from the *Ayurvedic* point of view, then, it becomes quite evident, that it is a fat depleting substance and in *Ayurvedic* texts, it is also mentioned that, it reduces the obesity. In other words *Guggulu* is specific to produce emaciation and dehydration with its properties of *ushnavirya*, *katu- vipaka*, *laghu*, *vishad* and *ruksha-guna* and *tikta*, *katu-rasa*; it is able to permeate in to the tissues, dry the area and make the entire tissue light^[13]. *Shigru bija* oil had got its reference from *Sushruta Sutra Sthan – 45/115*, where *acharya Sushruta* has explained that *Shigru bija* oil is *tikshana* and *laghu* in *guna*, *ushana* in *virya*, *katu* in *rasa* and *katu* in *vipaka*, so it pacify the vitiated *vata* and *kapha* doshas (responsible for pain and oedema respectively)^[14] and destroy the *krimi* (worms), *kustha* (skin diseases), *prameha* (diabetes) and *shiro rogas*. *Acharya Charaka* says that “*Dravya* exhibit some action by *rasa*, some by *virya* and others by *guna*, *vipaka* and *prabhava*.”^[15]

In this way both the selected drugs with these pharmacodynamical properties is likely to bring vitiated *doshas* in their normal stage (*samyavastha*) and remove the obstruction of channels (*srotovaradha*), involved, which is the main pathology in the *Abhigataja Shopha* (Traumatic inflammation) and ultimately help in the effective cure of the disease. The over-

all study showed that these formulations have good results on the disease. All the patients tolerated the drug very well and no any adverse effects were reported by any of the patient, registered in the current series of 30 patients of *Abhighataj Shopha* (Traumatic inflammation) suggesting that the both drugs selected for the current clinical trial are absolutely safe for local application (*Shiru seed* oil) and oral therapy (*Sigru guggulu*).

CONCLUSION

At the completion of the study, following points can be concluded on the basis of observations made, results achieved and through discussion in the present context. In *Ayurvedic* classics a due attention has been given to the entity “*Shopha*”. The disease has got its references with various names, in *Charaka, Sushruta, Kashyap samhitas* and in *Astang Samgraha, Astanga Hridayam, Madhav niddan* and has also been mentioned in *Bhava Prakash*, but with the name of *Abhighataj Shopha*, it is described by only *acharya Vagbhatta*. High incidence of the disease was found between the 16-30 of age group, in males (Sex), in students (Occupation). This fact is in accordance with the epidemiological data's worldwide that life is busiest here, so that its proneness towards soft tissue injuries is too much. The temperature rise was observed more in inflammation of ankle joints produced by traumatic injuries in comparison to other joints taken for the study. No any adverse effect, such as: nausea, vomiting, G.I. upsets, itching and burning sensation etc. of therapy were noticed during treatment period. In this way we can say that multifactorial approach is must for successful management of Traumatic inflammation, which should include use of oral as well as local application of *vednashamak* and

shothagna drugs along with dietary control. Significant results on various symptoms elucidate effectiveness of therapy, combating the probable *samprapti* (Pathogenesis) of this disease. During follow-up period, patients complained of mild pain, which more often aggravates after strenuous activity. It shows that there should be control on strenuous exercise of affected part for duration of at least 6-8 weeks, after discontinuation of therapy. “Hence *Shigru Bija* oil along with *Shigru guggulu* may be used as “Therapeutic agent” in acute and uncomplicated cases of Traumatic inflammation or as an adjuvant therapy in chronic cases of Traumatic inflammation for promotion and maintenance of positive health”.

REFERENCES

1. Sushrut Samhita of Sushrut. Ayurved tatva Sandipika Hindi commentary by Kaviraj Ambikadutt Shastri. Choukhambha Sanskrit Sansthan, Varanasi. Reprint edition, Chikitsa sthana 1/4. pg.2 (2006).
2. Sushrut Samhita of Sushrut. Ayurved tatva Sandipika Hindi commentary by Kaviraj Ambikadutt Shastri. Choukhambha Sanskrit Sansthan, Varanasi. Reprint edition, Chikitsa sthana 17/3. pg.70 (2006).
3. Charaka Samhita of Agnivesha. Edited with Charak Chandrika Hindi Commentary by Brahmanand Tripathi, Chaukhambha Surbharati Prakashan, Varanasi. Reprint edition. Uttardaha Chikitsa Sthan 12/17-19. pg.441 (2009).
4. Cotran, Kumar & Collins, Acute and Chronic Inflammation. Robbin's Pathologic basis of Diseases, 6th Edition. ; Singapore, W.B.Saunders company, pg-3:50 (1999).
5. Cotran, Kumar & Collins, Acute and Chronic Inflammation. Robbin's Patho-

- logic basis of Diseases, 6th Edition. ; Singapore, W.B.Saunders company,pg-3:53 (1999).
6. Harsh Mohan, Inflammation and Healing. Text book of Pathology, 3rd edition. New Delhi, Jaypee brothers publication, pg-5:134 (1998).
 7. Tripathi KD, Nonsteroidal Antiinflammatory Drugs and Antipyretic-Analgesics. Essentials of medical pharmacology, 6th edition. New Delhi, Jaypee brothers publication, pg-14:187 (2008).
 8. Bhavaprakash Nigantu of Shri Bhav-mishra.Hindi commentary by K.C.Chunekar. Choukhambha bharati academy, Varanasi. Reprint edition Guduchyadi varga : 105-110. pg.339 (2004).
 9. Sushrut Samhita of Sushrut.Ayurved tatva Sandipika Hindi commentary by Kaviraj Ambikadutt Shastri. Choukhambha Sanskrit Sans-than,Varanasi.Reprint edition,Sutra Sthan45/114.pg.179(2006).
 10. Bhavaprakash Nigantu of Shri Bhav-mishra.Hindi commentary by K.C.Chunekar. Choukhambha bharati academy,Varanasi. Reprint edition Guduchyadi varga : 105-110. pg.339 (2004).
 11. Charaka Samhita of Agnivesh Vol.I Vaidyamanorama Hindi Commentary by Vidhyadhar Shukla and Ravidatt Tripathi. Chaukhambha Sanskrit Prathisthan,Varanasi.Reprint edition. Su-trasthan 26/5.pg.371(2006).
 12. Charaka Samhita of Agnivesh Vol. I edited with Vaidyamanorama Hindi Commentary by Vidhyadhar Shukla and Ravidatt Tripathi. Chaukhambha Sanskrit Prathisthan, Varanasi. Reprint edition. Sutrasthan 26/4. pg.370 (2006).
 13. Bhavaprakash Nigantu of Shri Bhav-mishra. with Hindi commentary edited

CORRESPONDING AUTHOR

Dr. Uttam Kumar

MS (Ayu.), [Ph.D.]

Assistant Professor (Shalya Tantra)

College, ISM, SGT University,

Gurgaon, Haryana, India

Email: druk01508@gmail.com

Source of support: Nil

Conflict of interest: None Declared