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EVALUATION OF THE EFFECT OF AN ETHNIC FORMULATION-*LASUNA LAKSHADI YOGA* IN *ASTHI SANDHI MARMAGATHA VYADHIES*- A CLINICAL TRIAL

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ABSTRACT

Introduction: *Asthi sandhi marma kshatha* are considered as common musculoskeletal disorders among working group population. *Auyrvedic* medical fraternity have preserved the health of the common working class since ages. *Susrutha* defines *Marma* as a conglomeration of structures like *Marma, Asthi, Sandhi, Sira* and *Snayu*. *Marma kshata* includes injury to *Marma sthana* which mainly affects the Musculoskeletal system including bones, joints, ligaments, tendons and localized blood circulatory system. *Marma* related clinical data can be assessed in certain conditions like cervical spondylosis, lumbar spondylosis, sprains, fractures, joint pain etc. The injury to *Marma sthana* may lead to severe complications. There is a special ethnic formulation practiced among the tribal people in Kerala which includes *lasuna, laksha* and certain other ingredients which are found highly potential in management of *Marma kshata*. The study was conducted in the form of a clinical trial in a group of 20 patients to evaluate the efficacy of this particular yoga (*lasuna lakshadi yoga*) in *Marmakshata*. **Aims and objectives:** To evaluate the effectiveness of *lasuna lakshadi yoga* in *marma asthi sandhigatha vyadhies (musculoskeletal disorders).* **Materials and methods:** The selected patients with *asthi sandhi marmagatha vyadhies* (musculoskeletal disorders) were administered with *lasuna lakshadi ksheera paka* internally.

KEYWORDS: Musculoskeletal system, *Madyama Rogamarga, Asthi, Sandi, Snayu, Kandara.*

1. INTRODUCTION

Marma sandhi asthi vyadhis comes under *madhyama roga marga* which include *vyadhis* affecting the structures like *marma, asthi, sandhi, sira, kandhara* etc. Similar are musculoskeletal disorders which are the disorders that affect the musculoskeletal system which include muscles, bones, ligaments, tendons etc. MSD represent one of the most common and expensive occupational health problem in both developing and developed countries. *Lasuna lakshadi ksheera paka* is a common ethnic practice in some parts of Kerala which holds very effective in *marma kshatha*. This *yoga* in recent times have been adopted by some *ayurvedic* practitioners into their general practice, and to the surprise found out that it can have effective results not only in managing musculoskeletal injuries with traumatic origin but also successfully managing the degenerative conditions like osteo-arthritis, lumbar, cervical spondylosis etc.

2. LASUNA LAKSHADI KSHEERA PAKA

Table 1: *contents of lasuna lakshadi ksheerapaka.*

• *Lashuna*	*10 grams*
• *Yashti madhu*	*10 grams*
• *Laksha*	*10 grams*
• *Guduchi swarasa*	*10 ml*
• *Ksheera*	*100 ml*
• *Jala*	*100 ml*

- *Ksheerapaka* was prepared as per the ethnic formulation.
- The ethnic method for preparation of *ksheerkashaya* was incorporated in making the *yoga*. Classical method of preparation of *ksheerapaka* was not followed.
- 200 ml of total liquid proportion was boiled and reduced to 100 ml.

  Source of data: 20 patients with *marma asthi sandhi gatha vyadhies (*musculoskeletal disorders) were selected randomly from the outpatient department of GAMC, Mysore.

Inclusion Criteria

- Patients with musculoskeletal disorders of traumatic(*kshatha)* and degenerative origin.
- Both male and female patients.
- Patients age group between 30 – 60 years.

Exclusion criteria

- Infective diseases of bone like osteomyelitis
- Auto immune diseases affecting the musculoskeletal system

- Patients with any other debilitating diseases.
- Patients with lactose intolerance were excluded.

Diagnostic criteria

- The clinical features like history of trauma, pain and swelling in the affected part.
- Reduced range of movement due to pain
- Supportive radiographic findings

Intervention

- Selected patients were examined as per the clinical Performa prepared for the study and subjected to routine blood and urine examinations to rule out other systemic disorders.
- 100 ml of *lasuna- lakshadi ksheerapaka* was given internally twice daily in morning and afternoon before food.
- The *ksheerkashaya* was administered for two weeks.
- Patients with *marma kshatha* was advised restrictions in their daily activities.
- *Sooksma vyayama*, ROM exercises were advised to patients with degenerative conditions.
- Patients were advised to restrict the use of *katu, lavana ,amla rasa, kshara* and *ruksha dravyas.*

Follow up study

- Patients were examined on initial day zero and further follow up was done on alternate days based on the changes in signs and symptoms.
- The improvement in the clinical symptoms of the disease was assessed based on the gradation of each symptoms as mentioned in table no 2

Table 2: *symptom wise gradation.*

Pain	Absent-0	Tolerable-1	Intolerable-2	
Swelling	Absent-0	Present-1		
Tenderness	Absent-0	Patient wince -1	Winces and Withdraws - 2	Does not allow to touch - 3
Loss of function	Absent - 0	Perform with difficulty – 1	Unable to perform -2	

3. LITERARY ANALYSIS OF THE INDIVIDUAL CONTENTS IN *LASUNA LAKSHADI KSHEERAPAKA*

LASHUNA(GARLIC)

Latin Name-Allium sativam Linn.

Family- Liliaceae

Synonyms- *Rasona, Ugragandha, Mahoushadha, Mlecchakanda,Yavaneshta*

Pharmacology of Lashuna

Rasa-: *Lashuna* is having *pancha* rasa. Except *Amla* rasa, Different parts have different Rasa like *patra* is having *Tikta Rasa*; *nala* is having *Lavana rasa* and *Katu pradhana Rasa*.

Guna-: Snigdha, tikshna, pichchhila, guru, sara.

Virya-: Ushna

Vipaka-: katu

Doshagnatha – *Kapha vata shamaka*. By its *Katu* and *Teekshna Guna* it is *Kapha shamaka* because of its *Snigdha, picchila, guru and ushna guna* it is *Vatashamaka*. Due to its *ushna guna* it increases *Raktha and Pitta.*[1]

KARMA -*Balya, **Asthisandhana**, Vajeekarana, Agnideepana, Hrudya, Paachana, Dhatuvardhana, Krimighna, Kantya, Rasayana, Vrushya, Balavarnakara, Medha Hita, Netrya, Swedajana, Mootrala, Uttejaka, kaphanissaraka, Durgandhahara, Rakthotklesha, Shotha, **Vedanasthapana**, Medhya, Netrya, deepana, Anulomana, Shoolaprashamana, Yakruthuttejaka, Kothaprashamana.*

Chemical Constituents-: Steamed distillation of crushed fresh bulbs yield 0.1-3.6% of a volatile oil. Some Sulphur containing compounds that make up This oil are thought to be responsible for most of garlic's pharmacological properties.[2] Some of the other important chemical constituents are mentioned below.

Allicin- Natural antibiotic-fights bacteria, mainly responsible for pungent odor. This widely researched component of garlic is highly therapeutic and is used in various drugs and pharmaceutics.

Ajoene-: Decreases blood cell clumping.

Selenium- Antioxidant contained in high quantities in garlic. Antioxidant fight oxidation and free radicals inside the body that wear out the body & may lead to cancer.

Saponins- Lowers blood pressure, decreasing chance of stroke.

Fructans - May stimulate the immune system.

Physiological Effects of Garlic-: Garlic lowers the blood pressure. Garlic lower the LDL Cholesterol. Garlic helps to reduce atherosclerotic build up (plaque) within the arterial system. One recent study shows this effect to be reasonably greater in women than men. Garlic lowers or helps to regulate blood sugar. Garlic helps to avert blood clots from forming thus reducing the overall possibility of strokes and thromboses. Garlic helps to remove the heavy metals such as lead and mercury from the body. Raw Garlic is a potent and natural antibiotic and, while for less strong than modern antibiotics, can still kill some strains of bacteria that have then become immune or resistant to modern antibiotics. Garlic has the anti-fungal and ant-viral properties. Garlic has anti-oxidant Properties and it is a great source of selenium.[3]

Ayurvedic interpretation on the action of *lashuna: lashuna* is highly *vatanulomaka*. It dissolves the *avarana* of *kapha* by its pungent taste and hot potency thereby correcting the pathway of *vata* especially *apana vata.* It is *theeksna* in nature, hence it is having *srotoshodhaka* effect, in turn normalizing the blood circulation and acts as *vedanasthapaka*. It digests the *ama* circulating in the body and lodged in the joints. It pacifies *vyanavayu* and removes joint edema and pain. Its removes obstruction of channels by its hot and penetrating qualities and causes onward movement and pacifies of *Pranavayu* and nourishes it. Hence, used in bell's palsy, paralysis, monoplegia etc. *Vagbhata* considered *Lashuna* as the *vatahara dravyas*. He emphasized the role of *Lashuna* as a *Rasayana* in the treatment of *vatavaranas*.

LAKSHA

Palliative use of Laksha Churna with milk is advocated by Sushruta in context of fracture management. The drug has Kashaya Rasa in predominance; hence, it definitely enhances the bone healing and bone growth by promoting callus formation. Further, this drug possesses Snigdha and Ushna Virya property; due to which, it pacifies Vata, thus act as analgesic and anti-inflammatory too. In the present study, callus formation was started early in Group A. This shows that, Laksha churna Vati stimulated the callus formation at an early stage to

facilitate early bone healing. It may act beneficial in fracture healing by influencing cellular organization and activity in the repair phenomena. It may help in raising mucopolysacchride contents and the collagen content of the treated bones. Thus, may help in initiating early collagenization phase than the control series. However, further study is required to establish its exact mode of action in the management of fracture.

Lac is the scarlet resinous secretion of a number of species of lac insects, of which the most commonly cultivated species is Kerria lac. Lac (also called *Laksha*) is a serum and secretion from a scale insect species Laccifer lacca. These insects suck the sap of several plants and bushes and secrete lac as a protective covering. Lac/Lakh or Laksha is a resin and wax mixture secretion from the scale insects as a hard protective covering. It is a natural commercial resin of animal origin.[4]

CATEGORY

Phylam — Arthropoda

Class — Insecta

Order — Hemiptera

Family — Lacciferidae

Genus — Laccifer

Species — Lacca

The major constituents Lac is a mixture of several substances, of which resin is the main constituent. The approximate percentage of different constituents of lac is given below.[5]

Resin – 68 to 90%

Dye – 2 to 10%

Wax – 5 to 6%

Mineral matter – 3 to 7%

Albuminous matter – 5 to 10%

Water – 2 to 3%

***Ayurvedic* interpretation on the action of *Laksha*:** Lac is considered *Kashaya rasa pradhana dravya, Sheetha veerya*, and *katu vipaka*. It balances *pitta-kapha* dosh and promotes strength. Palliative use of *Laksha Churna* with milk is advocated by *Sushruta* in context of fracture management. The drug has Kashaya Rasa in predominance; hence, it definitely enhances the bone healing and bone growth by promoting callus formation.

Further, this drug possesses *Snigdha* and *Ushna Virya* property; due to which, it pacifies *Vata*, thus act as analgesic and anti-inflammatory too. This shows that, *Laksha* stimulates the callus formation at an early stage to facilitate early bone healing. It may act beneficial in fracture healing by influencing cellular organization and activity in the repair phenomena. It may help in raising mucopolysacchride contents and the collagen content of the treated bones. Thus, may help in initiating early collagenization.

GUDUCHI

Guduchi (Tinospora cordifolia) of family Menispermaceae is an *Ayurvedic* drug. practiced effectively and extensively since ages, which is evidently proven by the modern science as an immunomodulator and capable of preventing the causation of many ailments such as untimely aging. *Guduchi* is a large spreading, glabrous, perennial, deciduous, climbing shrub distributed throughout India and South Asia. It is also commonly known as Amruthu (Malayalam), Amrutha balli (Kannada), Gurcha (Hindi), Guduchi (Marathi, Sanskrit), etc.[6] It has many medicinal properties such as anti-inflammatory, anti-diabetic, antiarthritic, antioxidant, anti-stress antileprotic, antimalarial, hepatoprotective, antiallergic and immunomodulatory activities.[7] The water extract of the stem of Tinospora cordifolia has been checked for anti-inflammatory activity in albino rats. It has significantly inhibited acute inflammatory response evoked by carrageenin when administered orally and intraperitoneal.[8] It is an important drug and is used in form of different preparations like *Satva, Ghrita, Tail, Swaras* etc. Also, as one of the important ingredients in many other formulations used for treating various diseases. In clinical practice it is mainly prescribed for diseases like Jwara, Shwetapradara, *Mandagani, Prameha, Daurbalya, Kamla*, etc. Its *Rasa is Tikta, Veerya* is *Ushna* and *Vipaka* is *Madhura*. It is considered the best drug in terms of availability, economy, ease of administration, etc. and further, at the dose levels employed clinically it is well tolerated.

YASHTIMADHU

Glycyrrhiza glabra, also known as liquorice and sweet wood, is native to the Mediterranean and certain areas of Asia. They have been used medically since at least 500 BC and liquorice has been described as ‘the grandfather of herbs’.[9] The Roman writers referred to it as Radix dulcis.[10] In old Chinese pharmacy, it was considered to belong to drugs of the first class and to it was ascribed the rejuvenating property when consumed for long periods.[11] It is the most prescribing herb after Ginseng in Chinese medicine used for ailments related spleen, liver and

Kidney[12] The root of *Yastimadhu* is usually preferred for therapeutic purpose, but *charaka* suggests its fruit for purgative activity. Its inclusion in eleven groups out of fifty medical formulations clearly projects the importance attributed to this drug by charaka.[13] He further summarized the properties and actions (activities) while furnishing the prime list of drugs *Chakshushya* (eye sight promoter), *Vrishya* (Aphrodisiac and fertility promoter), *Keshya* (Hair growth promoter), *Kanthya*(Voice promoter), *Varnya*(Complexion promoter), *Virajaneeya*(Antiseptic) and *Ropana*(healing) actions. *Charaka* suggested *Yastimadhu* in the management of *Hridroga* with *Katuki.*

Anti-inflammatory activity of G. glabra root extract has been established in several experimental animal models as well as clinical trials. Action resembles that of phenylbutazone, hydrocortisones. Glycyrrhizinic acid as well as its aglycon glycyrrhetic acid are clearly the active agents, and this has been established in several animal models.[14] The flavonoid liquiritin and its genin liquiritigenin also displayed anti-inflammatory action. Mode of action of glycyrrhizinic and glycyrrhetic acid has been investigated, and it has been shown that these compound do not inhibit prostaglandin synthesis, but rather operate by moving leucocytes towards the inflamed spots.[15]

4. DISCUSSION

- In *Ayurvedic* point of view all the structures that are said to cause the MSD comes under one heading *madhyama roga marga.*
- The concept of repetitive strain injuries also can be included under *marma kshata* as it mainly comprises musculoskeletal disorders.
- Many age related degenerative musculoskeletal disorders like spondylosis, spondylitis, osteoarthritis can be also included in the purview of *Asthi Sandhi Marma gatha vyadhies*.
- Once the *kshata* is not healed properly it can lead to further aggravation of the condition leading to early degenerative changes.
- The incidences of *marma kshatha* is most common in working population(20-50yrs)
- The works demanding extreme physical workload is being replaced by various machineries in the industrialized world. Even though the clinical cases of direct injury or *kshatha is* seldom seen, the importance of clinical practices with regards to traumatic injuries holds strong in treating pathologies occurring in *marma asthi sandi vyadhis*.
- The *lashuna lakshadi yoga* is an age old ethnic medicine used among some folklore practitioners in kerala. They used this formulation to treat fractures in extremities. By

analyzing the role of individual drugs in this formulation with *ayurvedic* phytochemistry it can be unanimously said that this particular formulation can play a major role in musculoskeletal disorders.

5. EFFECT OF THERAPY

- Pain, tenderness, swelling and loss of function are the important symptoms which can be elaborated in the purview of *marma asthi sandhigatha vyadhies.*
- *Lashuna ksheerapaka* improves the bio availability of the medicine and promotes the healing in deeper *dhathus*.
- The *vatanulomaka* and *vedanasthapak*a properties of *lasuna* helps the patient to tolerate the pain.
- Palliative use of *Laksha churna* with milk is advocated by Susrutha in the context of fracture management. It is *kashaya rasa pradhana* pacifying *pitta raktha prakopa* in *kshatha* and is *sandhaneeya.*
- The drug possesses *snigdha* and *ushna virya* property pacifying *vata.*
- *Yashti* is a drug told in *sandhaneeya gana* by charaka and with *madhura* and *kashaya rasa* it is *pitta hara* which can effectively manage early age related degenerative changes.
- As it is having *snighdha* and *guru guna* pacifies the *vata* in *marma kshata.*
- Anti-inflammatory and immuno-modulatory effect of *guduchi* will further catalyze the effect of the formulation.

6. CONCLUSION

- The clinical study showed that there was a significant improvement in the condition of the patients.
- All the symptoms pain, swelling, tenderness, loss of function was statistically analyzed and found that there was a considerable change($p<0.01$) after the treatment.
- There were no adverse effects of the drug causing allergy, gastritis, bulimia etc.
- Thus the present study revealed that the ethnic formulation is safe, effective and devoid of complication.

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