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Review Article

Musculoskletal Disorders

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A critical review on effects of Rasayana in Musculoskletal Disorders w.s.r. to Rasna and Guduchi

Rahul H[1], Lakshmi OS[2*]

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[1] Rahul H, Assistant Professor, Department of Panchakarma, Vaidyaratnam Ayurveda College, Ollur, Thrissur, Kerala, India.

[2*] Lakshmi OS, House Surgeon, Vaidyaratnam Ayurveda College, Ollur, Thrissur, Kerala, India.

Musculoskeletal degenerative conditions such as osteoarthritis, rheumatoid arthritis etc are common diseases that lead to significant morbidity, reduced quality of life and also economic burden. In the management of these conditions includes pharmacological and non-pharmacological interventions. There are standard descriptions on the Rasayana effect of Guduchi and Rasna in Musculoskeletal degenerative conditions. A concise summary of the article, outlining the focus on the role of Guduchi and Rasna in treating musculoskeletal degenerative conditions, such as osteoarthritis and rheumatoid arthritis. Ayurvedic and modern references were studied and made a review on that. Also, several studies on the drugs were mentioned as supportive evidence for the same. Findings were recorded. Both drugs have shown promising results in clinical studies, with evidence suggesting that their combined use may help in reducing pain, improving joint function, and slowing the progression of musculoskeletal degeneration. The article further explores the pharmacological mechanisms underlying their therapeutic effects, potential synergistic benefits, for musculoskeletal health. Here briefly mention the medicinal properties of both herbs, their known benefits, and the need for further scientific exploration of their effects.

Keywords: Musculoskeletal disorders, Guduchi, Rasna

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Introduction

Musculoskeletal degenerative conditions, are a class of diseases related to the gradual structural and functional deterioration of muscles, joints, and bones, including osteoarthritis (OA), osteoporosis (OP), sarcopenia (SP) and inter-vertebral disc degeneration (IDD), are common causes of chronic pain, disability, and diminished quality of life, particularly among the elderly. OA, characterized by deteriorated cartilage and bone in the affected joints, and RA, an autoimmune disorder that causes joint inflammation, share common features of pain, stiffness, and eventually leads to loss of daily function because of chronic pain and fatigue. An approximate 1% of the population suffers from rheumatoid arthritis (RA), with more persistence in females than males. Patients may also have deteriorated cartilage and bone in the affected joints, which leads to permanent disability, with the progression of the disease. While conventional treatments, such as NSAIDs and corticosteroids, provide symptomatic relief, they are often associated with side effects, including gastrointestinal issues and long-term dependency.

The macrophage is an important pathogenic mediator in RA, and cytokines such as TNF-α and interleukin-1 (IL-1) become therapeutic targets. The drugs that block TNF-α decrease joint inflammation and also slow radiographic progression. In this context, *Ayurvedic* herbs, particularly *Guduchi* (*Tinospora cordifolia*) and *Rasna* (*Pluchea lanceolata*), have gained interest for their potential role in managing musculoskeletal degenerative diseases. Both herbs are integral to *Ayurveda's* holistic approach, addressing inflammation, pain & overall joint health through their anti-inflammatory, analgesic & rejuvenating properties.

Aim and Objectives

1. To put an insight on various references of *Rasna* and *Guduchi*.
2. To understand the *Rasayana* effect of *Rasna* and *Guduchi* in musculoskeletal degenerative conditions.

Materials and Methods

The material is taken from various texts like Charaka Samhitha, Ashtanga Hridaya, Susruta Samhita, articles, books etc.

Review of Literature

In *Ayurveda*, musculoskeletal health is influenced by the balance of the three Doshas- *Vata, Pitta,* and *Kapha.* Joint and bone health are primarily associated with *Vata*, the *Dosha* responsible for movement, and its imbalance can lead to conditions such as arthritis. *Ayurveda* aims to restore balance by using natural substances, including herbs like *Guduchi* and *Rasna*, to correct *Vata* imbalances and manage symptoms of degeneration.

Ayurvedic References

The two primary causes of *Vata* aggravation are *Dhatu Kshaya* (tissue depletion) and *Margavarodha* (obstruction in channels). In the case of *Sandhigata Vata*, tissue depletion (*Kshaya*) is the main factor. *Acharya Charaka* defines it as a disorder resulting from the consumption of *Vata*-aggravating food and lifestyle habits, presenting symptoms such as swelling (*Sotha*), which feels like an air-filled sac (*Vata Purna Driti Sparsha*), and pain during joint movements, particularly flexion and extension (*Akunchana Prasarane Vedana*).**[1]**

Acharya Sushruta described *Sandhigata Vata* with symptoms such as pain (*Shula*), swelling (*Shotha*), and restricted joint movement (*Hanti Sandhigatah*). **[2]**

Acharya Vagbhata and other scholars have elaborated on the condition in line with the descriptions given by *Charaka* and *Sushruta*.

Similarly, *Acharya Madhavakara* also mentioned the symptoms of *Hanti Sandhigatah* and *Shula* (pain), consistent with *Sushruta's* description.

Sandhigata Vata is considered *Kashtasadhya* (difficult to cure) due to its involvement with *Marma*, its location in the *Madhyama Rogamarga* (middle path of disease), the dominance of *Vata Dosha*, and its occurrence primarily in old age (*Vridhavastha*), a period characterized by *Dhatukshaya* (diminished *Dhatu*). These factors further contribute to its challenging prognosis. Acharya *Charaka* has recommended general treatments for *Vatavyadhi*, including repeated administration of *Snehana* (oleation), *Swedana* (sudation), *Basti* (medicated enema), and *Mridu Virechana* (mild purgation). Acharya Sushruta specifically outlined the treatment for *Sandhigata Vata*, which includes *Snehana* (oleation),

Upanaha (poultice), *Bandhana* (bandaging), and *Unmardana* (massage). Additionally, *Rasayana* therapy can be highly beneficial in managing this degenerative joint disorder, as it helps slow down tissue degeneration and promotes the rejuvenation of *Nava Dhatu* (new tissues).**[3]**

Rasayana

The word "*Rasayana*" is formed from two Sanskrit terms: "*Rasa*," which means essence or nourishment, and "*Ayana*," meaning path. Together, they refer to the path of nourishment and its distribution throughout the body. *Rasayana* therapy primarily emphasizes the nourishment and rejuvenation of tissues. It encompasses various medicinal preparations, dietary practices, and lifestyle changes designed to improve the body's overall nutritional health.

As stated in the Text: *Labhapayo Hi Sastanam Rasadinam Rasayanam" "Yajjaravyaadhi Nashanam Tad Rasayanam"***[4]**

Rasayana therapy plays a crucial role in promoting positive nutrition, strengthening immunity, enhancing longevity, and maintaining mental and sensory functions. Beyond fostering overall physical and mental well-being, *Rasayana* therapy also serves as a preventive measure against various diseases by boosting immunity and bio-strength. Additionally, *Rasayana* drugs function as antioxidants, which inhibit oxidation- a process that can generate free radicals and contribute to cellular damage. Given these benefits, *Rasayana* therapy holds significant potential in managing musculoskeletal disorders by slowing degeneration, improving tissue repair, and enhancing overall joint health.

***Rasayana* Drugs for *Sandhigata Vata* (Osteoarthritis):**

Rasona (*Allium sativum*); *Guggulu (Comiphoros mukul); Ashwagandha (Withania somnifera); Shunthi (Gingiber officinale); Guduchi (Tinospora cordifolia); Amalaki (Emblica officinalis); Bala* (Sida cordifolia); *Masha* (*Phaseolus trilobus); Rasna (Pluchea lanceolata)* and cow's milk, *Takra* (buttermilk)**[5]**

***Guduchi* (*Tinospora cordifolia*)**

"Gudati Rakshati Rogebhyah Iti" **[6]**

Denotes "*Guduchi* protects from diseases".

Synonyms

Guduchi protects from diseases and is known by the names *Kandotbhava, Chinnarooha, Madhuparni, Tantrika, Vayasya, Jwaranashini, Soma, Jeevanthi, Amrita, Vayasya, Visalya, Soma, Rasayani, Chandralakshanika.***[7]**

Karma- *Jwarahara* (fever reducing), ***Rasayana***, *Sangrahi (*accumulating*), Dipana* (activating digestive strength), *Amahara (*relieves *Ama), Trisnahara* (relieves thirst), *Dahahara* (relieves burning sensation*), Pramehaghna* (alleviate *Prameha*), *Kasahara* (alleviates cough*), Kushtaghna,* (alleviates skin diseases*), Balya* (promotes strength*), Krimighna* (relieves worm infestations), *Chardighna* (relieves vomiting), *Arsoghna* (cure piles), ***Medhya*** (promote intelligence), *Hridya* (good for heart), *Chaksushya* (good for eyes), ***Vayasthapana*** (rejuvenating).

Guduchi, often referred to as "*Amrita*" or "the nectar of immortality," is a climbing shrub widely used in *Ayurveda* for its immune-boosting, anti-inflammatory, and detoxifying properties. It is considered a *Rasayana* that helps enhance vitality and longevity. *Guduchi* is especially valued in treating inflammatory conditions like arthritis, where it is believed to reduce swelling, pain, and improve joint function by balancing the *Doshas*.

Rasa Panchaka

Rasa (taste) - *Tikta, Katu* (bitter, pungent)

Guna (quality) - *Guru, Snigdha* (heavy, unctuous)

Virya (potency) - *Ushna* (hot)

Vipaka (metabolic end product) - *Madhura* (sweet)

Dosha Karma of *Guduchi* - *Tridosha Samaka* (alleviates *Tridosha), Vata Samaka* (alleviates *Vata*) because of *Ushna Virya* (hot potency) & *Madhura Vipaka* (sweet after digestion). *Pittahara* (alleviates *Pitta*) due to *Madhura Vipaka* & *Tikta Kashaya Rasa* (*Kapha Shamaka* bec. of *Ushna Virya* (hot potency) & *Tikta Kashaya Rasa* (bitter, astringent taste)

Agrya Karma - Samgrahika (astringent), *Vaatahara* (alleviates *Vata), Deepaneeya* (appetizer), *Sleshma Shonithavibandha Prasanaanaam* (pacifies *Kapha*, pacifies *Rakta* and is useful in *Vibandha*.)

***Rasna* (*Pluchea lanceolata*)**

Rasyate Sabtathe Kaphavatajith Ityaadi Gunayukta|

Yadva Arasyate Aswadyate Sodhaadirogibhih Iti||**[8]**

Rasna plant is praised owing to its *Kaphavatahara* (relieves *Kapha* and *Vata*) properties. It is the best drug for *Sotha* (swelling) etc. diseases.

Synonyms

It is known by the names *Rasya, Surasa, Sugandha, Sreyasi* etc.**[9]**

Karma - *Sophahara* (relieves swelling), *Swasahara* (relieves dyspnoea), *Vatasulahara* (relieves pain), *Kasahara* (alleviates cough), *Jwarahara* (relieves fever), *Visahara* (relieves from toxins*), Sidhmahara* (relieves *Sidhma*), *Pacaka* (digests).

It is known for its analgesic, anti-inflammatory & anti-rheumatic properties. It is commonly used in treatment of musculoskeletal disorders, particularly those involving joint pain, stiffness & inflammation. *Rasna* is also considered *Vata*-pacifying herb, which makes it effective in conditions like OA and RA, where excessive movement of *Vata* causes degeneration & pain in joints.

Rasa Panchaka**[10]**

Rasa (taste) - *Tikta* (bitter)

Guna (quality) - *Guru* (heavy)

Virya (potency) - *Ushna* (hot)

Vipaka (metabolic end product) - *Katu* (pungent)

Dosha Karma* of *Rasna - *Vata Kapha Samaka (*alleviates *Vata* and *Kapha)*, *Vatahara* (alleviates *Vata*) because of *Ushna Virya* (hot potency) and *Kaphahara* (alleviates *Kapha*) due to *Ushna Virya, Katu Vipaka* and *Tikta Rasa.*

Agrya Karma - Vaataharaanaam
Rasna is best for *Vatavyadhi* (diseases of *Vata*)

Pharmacological mechanisms, scientific evidences and clinical studies

Both *Guduchi* and *Rasna* possess remarkable pharmacological properties that align with their traditional use in musculoskeletal degenerative diseases. Modern research has begun to explore the mechanisms behind their therapeutic effects.

Guduchi
Anti-inflammatory effects:

Guduchi has been shown to inhibit the production of inflammatory cytokines such as TNF-alpha and IL-6, Which are implicated in arthritis. By suppressing these pro-inflammatory mediators, *Guduchi* helps reduce inflammation in the joints. *Guduchi* inhibits NF-k B signalling, a critical pathway in chronic inflammation.**[11]** An *in-vivo* study of methanol extracts of the aerial part of *T. cordifolia* on *Mycobacterium tuberculosis* in arthritic rats showed the anti-inflammatory effect of *T. cordifolia*. *T. cordifolia* altered the balance of pro-inflammatory versus anti-inflammatory cytokines primarily by down-regulating the pro-inflammatory cytokines.

In addition, the ethanolic extract of *T. cordifolia* inhibited two interrelated features of arthritis: such as inflammation and bone damage. *T. cordifolia* ethanolic extract also brought about changes in cytokines, chemokines, and mediators of bone remodelling, which play a crucial role in arthritis pathogenesis.**[12]**

Anti-osteoporotic activity

On aging, the loss of bone mass and strength are the most common signs and symptoms of osteoporosis, resulting in fragility fractures.

T. cordifolia extract in human osteoblast-like cells MG-63 and primary osteoblast cells in rats showed the osteoprotective effect *in-vitro*. In-vivo studies on rats indicated osteoprotective effects as well.

Cell morphology studies clearly showed the increase in cell numbers and absence of adverse changes in the cell structure after treatment with the extract.

Abirama sundari *et al.* (2017) investigated the effects of an alcoholic extract of *T. cordifolia* on bone remodelling *in-vitro* and protected against ovariectomy-induced bone loss *in-vivo*.

In-vitro studies showed that the ethanolic extract of *T. cordifolia* stimulated the proliferation of osteoblasts, but the aqueous extract of *T. cordifolia* showed no influence on cell proliferation. Study results revealed that ethanolic extract of *T. cordifolia* treatment on osteoblasts elicits pro-stimulatory effects. On the other hand, no such effect has been seen on osteoclast cells, thereby indicating that it has no effect on resorption in bone tissue.**[13]**

Antioxidant Activity

Guduchi exhibits strong antiox. properties, which are essential for neutralizing free radicals. Oxidative stress known contributor to cartilage degeneration,

Making *Guduchi* beneficial in preventing or slowing down progression of degenerative joint diseases.

T. Cordifolia is mentioned as *Vishaghni* (removes toxins), *Vishahara* (relieves from toxins) and *Tridoshashamaka* in various texts of *Ayurveda*.**[14]**

Immunomodulation

Guduchi has immunomodulatory effects, meaning it can balance the immune system. In autoimmune conditions like RA, where the body attacks its own tissues, *Guduchi* may help in regulating immune responses and reducing the autoimmune attack on the joints.

In Ayurveda *T. cordifolia* is believed to have *Rasayana*, *Balya*, *Vayahsthapana* (anti-aging), *Ayushyaprada* (increasing life span), *Vrishya* (aphrodisiac) and *Chakshushya* (for eye disorders) properties.**[15]**

Rasna

Pain Relief and Anti-inflammatory Mechanism: *Rasna* contains several bioactive compounds that possess analgesic and anti-inflammatory properties. Studies have shown that *Rasna* inhibits the production of prostaglandins, which are responsible for pain and swelling in inflamed joints.

Several compounds including taraxasterol acetate, psi-taraxasterol, querecetin, quercitin, isorhamnetin, neolupenol, neolupeol, sorghumol, sorghumol acetate and other constituents from *Pluchea lanceolata,* were investigated for anti-arthritic and anti- inflammatory activities. The ethanolic extract of *Pluchea lanceolata* showed notable anti-inflammatory activity.**[16]**

The compounds isolated from *Pluchea lanceolata* were subjected for anti-inflammatory testing which exhibited significant anti-inflammatory and anti-arthritic activities in carrageenin induced paw oedema model in albino rats.**[17]**

Joint Protection: *Rasna* may also help protect the joints from further damage by reducing cartilage degradation and improving joint mobility. It has been shown to have a muscle-relaxant effect, which helps reduce stiffness and improves flexibility.

***Rasna* in *Vata* disorders:** As *Rasna* is specifically known for its ability to balance *Vata*, it is beneficial in conditions where *Vata* imbalance leads to joint degeneration, pain, and discomfort.

Discussion

Rasayana therapy holds a distinct position in *Ayurvedic* texts, primarily focusing on body rejuvenation. Based on its method of administration and range of applications, it can be effectively utilized for the improved management of degenerative joint diseases.

***Guduchi* in Musculoskeletal Conditions**

A number of studies have explored the efficacy of *Guduchi* in managing musculoskeletal disorders also shown significantly reduce pain and inflammation in patients with osteoarthritis. It was observed that participants who took *Guduchi* experienced improved joint function, less stiffness, and a reduction in inflammatory markers such as C-reactive protein (CRP).

Another study on rheumatoid arthritis found that *Guduchi* supplementation resulted in a decrease in serum TNF-alpha levels, which is a critical marker of inflammation in RA. This suggests that *Guduchi* may not only alleviate symptoms but may also influence underlying inflammatory proc. in chronic conditions.

***Rasna* in Musculoskeletal Conditions**

Rasna has been traditionally` used to treat joint pain and stiffness, and recent studies corroborate these claims. Also, studies examining the effects of *Rasna* in patients with rheumatoid arthritis showed that *Rasna* supplementation led to significant reductions in pain, swelling, and joint tenderness. Rasna's anti-inflammatory action was attributed to its ability to modulate COX-2 enzymes, which are involved in the inflammatory process.

Moreover, *Rasna* has been shown to improve joint mobility in conditions like osteoarthritis by alleviating stiffness and reducing intensity of pain.

Long-term Management

By addressing inflammation, immune modulation, and tissue regeneration, *Guduchi* and *Rasna* can contribute to the long-term management of musculoskeletal degeneration, slowing down the disease progression and enhancing quality of life.

To treat *Asthi Majja Gata Vata*, drugs acting on both *Vata* and *Asthi* should be selected. So, it helps in the improvement of the general condition of health and thus strengthens the whole body.

Conclusion

Degenerative joint disorders require early intervention to prevent disease progression and avoid permanent physical disability. *Rasayana* therapy should be incorporated into the treatment of musculoskeletal disorders to halt its advancement at the right stage. This approach offers multiple benefits, including enhanced nutritional status, healthier tissue regeneration, a stronger immune system, improved cognitive function, and overall longevity.

The combination of *Guduchi* and *Rasna* offers a promising natural approach to managing musculoskeletal degenerative conditions. Their individual properties as anti-inflammatory, analgesic, and joint-rejuvenating agents make them effective in treating conditions such as osteoarthritis and rheumatoid arthritis. While modern research supports their therapeutic potential, more large-scale, clinical studies are needed to fully validate their efficacy and establish standardized treatment protocols. With continued research, these herbs may play a key role in integrative healthcare approaches for chronic musculoskeletal diseases.

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