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Role Of *Guduchi (Tinospora Cordifolia Miers.)* in Autoimmune Disorders; A Review Article.

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ABSTRACT:

Ayurveda is science of life with the aim of attaining health and curing disease of ill. Among thirteen types of *Agni*, *Jatharagni* is main and when it gets tone down, all other *Agnis* become diminished too. As a result of that phenomenon, *Deha-dhatu* remains in inchoate form, that vitiated the *Adhya dhatu Rasa* when this vitiated *Rasa* enters in *Amasaya*, it is called as *Ama* (an unripe form of *Rasa*). Autoimmunity is the condition when the immune system produces a response against one or more of the body's normal constituents as if they are harmful. The response may include specific immune cells and/or antibodies. In ancient Ayurvedic text a disease *Amavata* is said to be caused by *Ama*. In modern perspective *Amavata* can be correlated with Rheumatoid arthritis, which is an autoimmune disorder. So here *Ama* can be correlated with free radicals present in the body and blood. *Guduchi (Giloy)* comprises proven scientific effects over the oxidative stress in the body as it comprises antioxidants and qualities to rejuvenate the body hence called *Amrita* and *Rasayana*. It has *Deepana*, *Amahara*, *Rasayana*, *Sangrahi* and *Vayasthapana* properties, that's why it is useful in *Pachana* of *Ama* and hence management of Autoimmune disorders caused by *Ama*.

Key Words: *Agni, Jatharagni, Ama, Autoimmune disease, Guduchi*

INTRODUCTION

Food has been given the prime importance since *Vedic* period. It is considered as *Brahma* in *Upanishad*. This is responsible for growth, development and enhancement of the *Ojas*. Further, portion of food remains subsidiary when role of *Jatharagni* is being described. *Acharya Charak* has mentioned that *Ayushya* (longevity of life), *Varna* (lustre of the skin), *Bala* (strength of the body), *Swasthya* (physical and mental health), *Utsaha* (ardour), *Upchaya*

(metabolic process), *Prabha* (glow or tinge), *Ojas*, and even *Prana* (vitality) of individual depends on *Jatharagni*¹. Hence impairment of *Jatharagni* may leads to *Amavastha*. When *Jatharagni* gets tone down, all other *Agnis* become diminished too. As a result of that phenomenon, *Deha-dhatu* remains in inchoate form, that vitiated the *Adhya dhatu Rasa*. This inchoated and vitiated *rasa* when enters in *Amasaya*, it is called as *Ama* (an unripe form of *rasa*)².



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Agni thus deranged becomes unable to digest even the light food and the food being undigested gets acidified and **toxic** in nature³.

Lakshanas of Sama Dosh: -

As the *Ama* comes in contact with *vata* *doshas*, it vitiates all *Doshas* and *dhatu*s. Common symptoms cause by *Ama* as follows: -

it causes obstruction to the internal channels, tone down the bodily strength, causes heaviness in the body, flatulence, laziness, indigestion, frequent spitting, constipated bowel, lack of appetite, drowsiness etc⁴.

As mentioned earlier, according to Ayurveda *Sama* or *Apakva Rasa dhatu* is the main cause for *Amavastha*. Which may lead to impairment of normal functioning of body. As *Rasa dhatu* circulates throughout the body, the symptoms of *Amavastha* will also be related with whole body. Here we can correlate this *Ama* to excessive free radicals present in the blood stream and mean while circulating in whole body through blood.

AIMS AND OBJECTIVES

Hence, the present explorative literary work aims at

1. Collecting the relevant references regarding *Ama* and autoimmune disorders.
2. Constructing the concept of role of *Guduchi* in autoimmunity.

MATERIAL AND METHODS

To gather the references on *Guduchi* and its impact on autoimmunity, a thorough search of ancient texts like *Charak Samhita*, *Sushrut Samhita*, and *Ashtang Hridaya* was conducted. To support these statements even further references to papers, review articles, various text books and database were made. Later conclusion was drawn.

Review Of Literature

Autoimmunity is a condition when the body attacks and damage its own tissues. In response to an unknown trigger, the immune system may begin producing antibodies that instead of fighting infections, attack the body's own tissues. Examples of autoimmune diseases include: Rheumatoid arthritis, Systemic lupus erythematosus, Inflammatory bowel disease, Type 1 diabetes mellitus, Multiple sclerosis, Guillain Barre syndrome, Chronic inflammatory demyelinating polyneuropathy, Psoriasis, Graves' disease, Hashimoto thyroiditis, Myasthenia gravis, Vasculitis etc⁵.

Free radical theory: -

Free radicals including reactive oxygen species, are molecules with one or more unpaired electron. Examples of free radicals include: super oxide, Hydroxyl radical, Nitric oxide radical.

our body produce free radicals as by-products of cellular reaction, metabolism of food, breathing and other vital functions. The liver produces and uses free radicals for detoxification, while white blood cells send free radicals to destroy bacteria, viruses and damaged cells.

Evidence shows that most of the degenerative diseases that afflict humanity have their origin in deleterious free radical reaction. These diseases include Atherosclerosis, Cancer, Inflammatory joint diseases, Asthma, diabetes, Senile dementia, and Degenerative eye diseases⁶.

Oxidative stress: -

Oxidative stress is a state that occurs when there is a superfluous of free radicals in the body's cells. The body harvests free radicals during normal metabolic processes. However, cells also produce antioxidants that deactivates these free radicals. In general, the body is able to maintain an equilibrium between antioxidants and free radicals.

Numerous factors contribute to oxidative stress and excessive free radical production. these factors can include: Diet, Life style, Certain condition, environmental factors such as pollution and radiation.

Oxidative stress can harm cells, protein and DNA, which can contribute to aging. Oxidative stress is an unevenness of free radicals and antioxidants in the body which can lead to cell and tissue damage.

Various scientific evidence suggests that long term oxidative stress contribute to the development in a range of chronic conditions such as cancer, Diabetes and Heart diseases and autoimmune diseases⁷.

Relation between Autoimmune disease and free radical theory: -

An article published in Feb 2006 on "Free radical theory of Autoimmunity" by Subburaj Kannan (source: PubMed), specially focused on clinical oncology & chemotherapy shows evidence that oxidative stress induced conformational changes in intracellular proteins. Pro-survival genes are up-regulated in a reduced intra cellular state. It is suggested that increased expression of pro-survival genes enables tumour cells to evade chemotherapeutically induced cytotoxicity, conferring an adaptive growth advantage that aggravates the tendency of

tumour cells with MDR to repopulate the tumour burden, this leads to relapse and the subsequent development of Autoimmunity via several chronic redox state dependent reaction cascade.

shows that autoimmunity and oxidative stress caused by free radicals strictly interact to finally determine melanocyte loss. In this scenario, associated thyroid autoimmunity might play an important role in triggering and maintaining the depigmentation process of vitiligo⁸.

Role of *Guduchi* in management of Autoimmune disorders: -

The herbaceous trailing plant *Tinospora cordifolia*, also referred to as *Guduchi* or *Giloy*, is native to tropical areas of the Indian subcontinent. It has been employed in Ayurveda to treat a number of ailments.

Morphology of the plant⁹

It is a big, deciduous climbing vine with numerous long, twining branches that spreads widely.

Simple, alternating, exstipulate leaves have long, circular, pulvinate petioles that can reach a length of 15 cm (6 in), with the basal petiole being longer and slightly twisted halfway around. Due to its scarlet fruit and heart-shaped leaves, the heart-leaved moonseed earns its name.

The lamina is deeply seven nerved, broadly ovate, or ovate cordate, 10-20 cm (4-8 in) long, or 8-15 cm (3-6 in) wide. Unisexual flowers are small, occur on separate plants when the plant is leafless, and are greenish-yellow in colour on axillary and terminal racemes. Female flowers often grow alone, while male flowers are grouped.

Phytochemicals¹⁰

Numerous phytochemicals, such as alkaloids, cordifolide, unosporin, tinosporon, tinosporic acid, phytosterols, glycosides, tinosporide, and other complex chemical compounds, are found in *Tinospora cordifolia*. Its leaves have octacasanol, b-sitosterol, heptacosanol, magnoflorine, tembetarine and cardifolone.

Part used- mainly *Kaanda* (stem) and its roots, stems, and leaves are also employed.

Formulation of single herb – *Swarasa* (10-20 ml), *Hima* (10-20 ml), *Kwath* (20-25ml), *Churna* (3-5 grams), *Vati* (1/2-1 gram), *Satva* (500 mg- 1 gram) etc

Classification according to Ayurvedic classics¹¹⁻

Charaka Samhita – *Triptighna*, *Stanyashodhana*,

Dahaprashmana, *Snehopaga*, *Trishnanigrahana*, *Sandhaniya*, *Vayasthapana*

Sushrut Samhita – *Guduchyadi Gana*, *Patoladi Gana*, *Araghwadadi Gana*, *Kakolyadi Gana*, *Valli panchamoola*
Bhav Prakash Nighantu - *Guduchyadi Varga* 6-10

*Rasa Panchaka*¹² –

Rasa – *Tikta*, *kashaya*

Guna – *Guru*, *Snigdha*

Vipaka – *Madhura*

Virya – *Ushna*

*Doshakarma*¹³ – *Tridosha Shamaka*, *Vatashamaka* due to *Ushna Virya* and *Madhura Vipaka*. *Pittahara* because of *Madhura vipaka* and *Tikta Kashaya Rasa*, *Kapha Nashaka* due to *Ushna Virya* and *Tikta Kashaya Rasa*.

*Karma (Action)*¹⁴ – *Rasayana*, *Jwarahara*, *Sangrahi*, *Deepana*, *Amahara*, *Trishnahara*, *Dahahara*, *Medhya*, *Vayasthapana* etc

The Ministry of AYUSH advised using *T. cordifolia* (also known as "*Giloy*") as a home treatment for immune support during the 2020–22 COVID–19 outbreak in India, although this practice appeared to be connected to hepatitis illnesses among six Mumbai residents who used boiled or capsule preparations of the plant¹⁵.

Tinospora cordifolia comprises many different chemical constituents that have antioxidant and anti-inflammatory effects on the body. Some chemical constituents also have effect on bodily immune system¹⁶.

It is a widely used drugs in Ayurveda for various disorders such as inflammatory situations, autoimmune disorders, and carcinomas as well as for promoting general health. In vitro and in vivo studies on immune cells containing dendritic cells, macrophages, and B cells advocate its immune-modulating abilities.

This study provides insight into the plausible mechanism/s of anti-inflammatory activity of *T. cordifolia* involving T cells, mainly effective in Th17-associated autoimmune and inflammatory diseases¹⁷.

Using the rat adjuvant-induced arthritis model of human RA, a research investigation on the effect of *Tinospora cordifolia* on autoimmune arthritis has shown the anti-arthritic activity of *Tinospora cordifolia* extract (TCE) and elaborated the immunological processes behind this effect. Treatment with TCE reduced bone and cartilage loss and arthritic inflammation. The pro-inflammatory cytokines IL-1, TNF-, IL-6, and IL-17, the frequency of IL-17-producing T cells, and the production of chemokines such RANTES were all reduced as a result of TCE's anti-inflammatory action. Additionally, TCE therapy reduced

bone damage by favoring anti-osteoclastic activity over mediators of bone remodelling, such as receptor activator of nuclear factor- κ B ligand [RANKL] and MMP-9¹⁸. A subsequent in-vitro and in-vivo study on the anti-inflammatory and anti-arthritic effects of *Tinospora cordifolia* gave researchers a thorough understanding of the molecular processes involved¹⁹.

DISCUSSION

A relation between Autoimmune disorder and free radical theory has been established earlier in this paper, we can correlate *Sama dosha* in *Rasa dhatu* with free radicals in blood and body. Hence this can be directly said that *Amavastha* can cause Autoimmunity in body. *Guduchi* has *Tikta Kashaya Rasa* and *Ushna Virya* which digests the *Ama* and causes *Agni Sandipana* due to its *Guna*. As *Jwara* in the body is also resulted from the *Amavastha* so *Giloya* is said to be best *Jwaragna* medicine in the classics.

We have discussed about various studies supporting that *Tinospora cordifolia* has anti arthritic properties, also evidences support that it cures the autoimmune disorders

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due to presence of various chemical constituents.

It has mainly *Deepana, Amahara, Rasayana, Sangrahi* and *Vayasthapana Guna*, it is *Tikta Kashaya* in *Rasa* which is responsible for *Ama* and *Kapha vishoshana*, its *Virya* is *Ushna* which helps in digestion of indigested part of food (*Ama*) and *Madhura Vipaka* causes balancing of *Vata Pitta Kapha* by making it abundant with *Tridosha Shamaka* virtue. that's why it is useful Autoimmune disorders caused by *Ama*²⁰.

CONCLUSION

Ayurveda is a holistic approach for attaining health and curing disease of ill. The most magical and *Rasayana Aushadhi Guduchi* has many proven scientific evidence regarding enhancement of immune system, relieving the oxidative stress of the body as well as a good antioxidant as mentioned earlier in this article. Lastly, it can be concluded that the effective management of autoimmune disorder is possible through Ayurvedic herb '*Guduchi*', in the form of *Swarasa, Kwath, Satva Churna* or *Vati* which will be safest, cheapest and harmless.

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