



Review Article

www.ijrap.net (ISSN:2229-3566)



CRITICAL REVIEW ON THE EFFECT OF GUDUCHI AS RASAYANA IN STRESS

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Received on: 18/05/20 Accepted on: 06/11/20

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DOI: 10.7897/2277-4343.1106185

ABSTRACT

Stress is a feeling of emotional or physical tension. Any agent or event that threatens homeostasis and causes stress is stressors. Stress can come from any event or thought that makes you feel frustrated, angry or nervous. Prolonged exposure to stressors can cause emotional, behavioural and even physical symptoms and these symptoms of stress vary among different individuals. In Ayurveda Guduchi has been used as rasayana, its rasayana properties are to increase the vigor and immunity. Amrita is attributed to its ability to impart youthfulness, vitality, and longevity. Guduchi has pharmacological properties like deepana, jwara nashana and tridosha shamaka, detoxifies dhatus and rejuvenates the entire body. It is found to be safe on haematological and biochemical organ function tests and has muscle strengthening, lipid lowering action in healthy individuals. Guduchi has antioxidant activities which help in stress conditions.

Keywords: Stress, Guduchi, Rasayana

INTRODUCTION

In today's competitive and demanding society, it seems everyone is stressed. Rapid diversification of human activity increases the chance of development of stress. Stress is a physical, chemical or emotional factor that causes bodily or mental tension and act as a factor in disease causation. It affects the mind resulting in a multitude of symptoms ranging from mild problems like loss of interest to grave consequences like emotional outrage or chronic depression. Stress can increase the vulnerability of an organism to certain diseases by exerting an immunosuppressive effect. In human beings emotional stress is very important. If it is not properly tackled, it affects the balanced functioning of CNS. The failure of adaptation to stress leads to third stage, exhaustion, which may result in multitude of diseases.

Even though stress is a universal phenomenon, it means different things to different people. Stress can be classified into eustress and distress. Eustress is beneficial as it improves the performance of the individual while distress is alarming. It causes serious, detrimental effects on mental, physical and spiritual health of an individual. If left untreated; chronic distress can lead to coronary heart disease, gastrointestinal problems, suppression of the immune systems and short term memory problems.

Ayurveda is the oldest system of medicines and its antiquity goes back to vedas. Ayurvedic classics describe a set of rejuvenative measures called rasayanas which impart biological sustenance to the body tissues. Rasayanas are claimed to act as micronutrients. In Ashtanga hridaya "deergham aayu smrithim medha arogyam taanam vaya" is mentioned as gunas of rasayana. Guduchi swarasa is mentioned along with yashtimadhu, mandukaparni and shankupushpiin classical textbook as medhya rasayana.

Medhya Rasayana is CNS modulating. Since there is long history of their effective utilization in the Ayurvedic therapeutics for the

treatments of disability especially stress related ones, this group has a great potential to be adapted at global level or the treatment of stress related disorders. For this it is obligatory to retest the efficacy of this medhya rasayana with the current available research protocols; so that it can get a proper recognition in this modern scientific world.

Each and every cell in the body continuously produces free radicals which are removed by antioxidant defense system. Any slip in this cleansing cause accumulation of reactive oxygen species that leads to deleterious changes and diseases. Many of today's disease are due to oxidative stress that results from an imbalance between formation and neutralization of free radicals. Free radicals hamper the cellular function producing diseases. Proper measures should be taken to improve the antioxidant defence system of the cells. The drugs having antioxidant properties can reduce the impact of stress. Evidences indicate that oxidative stress and neurotrophins have a bidirectional relationship. Guduchi, a drug having neurotrophic property was used to manage physiological stress. Neurotrophins are protein which plays a vital role in the development and functioning of neurons. This quality of Guduchi was taken into consideration by ancient Acharya of Ayurveda. Charakacharya has included Guduchi in medhya rasayanas. Guduchi mitigates tridosha, detoxifies dhatus and rejuvenates the entire body.

Stress

Stress means strain, pressure or force on a system. In the context of human being, it is the body reacting to the environment through the build-up of internal pressure and the strain of muscles tensing for action. Stress can be defined as emotional, physical or biological factors which evokes an integrated response of the sympatho adrenal medullary system and hypothalamic pituitary adrenal cortex axis.

Signs and symptoms

1. Physical symptoms
2. Emotional symptoms
3. Relational symptoms

These three are interconnected as body and mind are closely related.

Physical symptoms

- Sleep disturbances
- Back, shoulder or neck pain
- Fatigue
- Weight gain or loss
- Excessive sweating on palms and feet
- Heartburn, gas problems, upset stomach
- Irritable bowel syndrome, constipation, diarrhoea
- Immune system suppression

Emotional symptoms

- Nervousness
- Depression, frustration
- Memory problems
- Anxiety
- Irritability
- Lack of concentration
- Phobias

Relational symptoms

The antisocial behaviour displayed in stressful situations can cause the rapid deterioration of relationships with family, friends and even with strangers.

- Increased arguments
- Isolation from social activities
- Frequent job changes
- Conflict with co-workers or employees¹

Systems that control stress

1. Autonomic control

- Sympathetic nervous system
- Parasympathetic nervous system

Sympathetic system

It is to provide extra activation of the body in state of stress.

When this system is stimulated, arterial pressure increases, blood flow to active muscles increase and gastrointestinal tract decreases. Rates of cellular metabolism throughout the body increase. There will be increase in blood glucose concentration, glycolysis in the liver and muscle, muscle strength, mental activity and blood coagulation².

Parasympathetic system

It slows heart rate, expands blood vessels, accelerates the functions of gastrointestinal system, constricts bronchioles, pupils, increase salivary secretion. After the arousal response, the parasympathetic system works to normalize the functions of all the organs involved.

Hypothalamus- Stimulation of appropriate areas of the hypothalamus can activate the sympathetic system. Hypothalamus play an important part in the control of feeding reflexes, licking of the lips in response to the taste of food, emotional patterns such as anger, excitement, sexual response, reaction to pain, pleasure etc.

Reticular formation - for reverberation of an impulse, which will prolong a response³

Endocrine system - pituitary and adrenal play major role.

Pituitary gland - when certain areas of hypothalamus is stimulated, it causes the anterior pituitary gland to secrete its endocrine hormones. Thoughts, anticipations and nervous system responses can do hormonal actions.

Adrenal gland - responsible for the physical manifestation of stress arousal, such as increased heart rate, respiration rates

It regulates stress by releasing hormones in to the blood stream

1. Epinephrine
2. Nor epinephrine
3. Cortisol
4. Aldosterone

Response of different systems of the body to stress

On muscular system

Speech, facial expression, eye movements, feeling and resolution of emotion is achieved through muscle movement. Muscle tension is almost a reflex reaction to stress. Chronically tense muscle stimulate the mind resulting in greater stress leading to numerous psychosomatic disorders like headache, backache, spasms of the oesophagus and colon, posture problems, asthma, tightness in the throat, chest cavity, some eye problems, lockjaw, muscle tears and perhaps rheumatoid arthritis⁴

GI system

GI system serves no function in the stress response. The GI system has an inherent rhythm and is governed by numerous automatic reflexes that control its movement, emptying and its secretion of enzymes. The GI system responds to emotional situations in a complex manner than the sympathetic and parasympathetic system.

On Brain

During rest and relaxation, the brain is said to be in homeostasis, i.e. the subjective moods of the individual are in harmony, promoting a healthy relationship between mind and body. During stress, the psychological mechanisms of the mind are put in to severe distress. An emotional variation is the one common characteristic of the stress reaction. Stress commonly elicits confusion, fear, extreme emotional sensitivity and feeling of ego-threat.

On cardiovascular system

In the case of cardiovascular disease, it is almost impossible to completely rule out the role of stress. Many psychological states increase cardiovascular activity. A new or unusual experience like fear, anger, anxiety and most situations that threaten the ego frequently elevates the heart rate.

Cardiovascular problem related to stress is chronically elevated blood pressure or hypertension. Since the primary work of the heart is to overcome the pressure in the arteries to which the blood must flow, high blood pressure greatly increase the work of heart and contributes to cardiovascular problems. Another condition concerning the cardiovascular system is atherosclerosis. During stress arousal, the hormones epinephrine and cortisol mobilizes fats and cholesterol for use by the muscles and the fats and cholesterol circulate in the blood stream until they are used or reabsorbed. Although there are many factors in the development of atherosclerosis, constantly saturating the system with unneeded fats through the stress mechanisms can exacerbate the problem.

On skin

It is difficult to think of the skin as a separate system capable of responding to stress arousal, but its complex function and intricate nervous control make it a sensitive response system.

During tense, anxious periods small blood vessels under the skin constricts causing the skin to appear pale and the skin temperature to decrease. With this type of response pattern, it is not hard to visualize how prolonged emotional responses could change the activity of the skin long enough to result in malfunction and disease.⁵

Rasayana

Charaka acharya defined Rasayana as the therapeutic measure or drug which prevents and control ageing, its consequences, postpones ageing, improves vision, vitalizes and nourishes the tissues, act as aphrodisiac and exerts profertility action.

Benefits of Rasayana

- Longevity
- Memory, intellect
- Freedom from disease
- Youth
- Excellence of complexion
- Excellent potentiality of the body and sense organs
- Vak sudhi⁶

Classification of Rasayana

Charaka- kuteepraveshika and vatatapika
Dalhana- kama, naimittika and ajasrika
Another- samshodhana and samsamana rasayana
Based on the purpose- kesya, medhya, balya

Rasayana is suggested to be used in early or middle age. While using rasayana one should consider age, sex and other factors. Rasayanam is administered after the person has undergone cleansing procedures. The benefits of rasayana multiply after a phase of precleansing of body and I ensure working at minute levels.

Guduchi

Properties

Rasa- tikta, katu
Guna- laghu, snighda
Veerya- ushna
Vipaka- madhura
Prabhava- vishagna

Karma- tridosha shamaka

Chemical constituents

Alkaloids, diterpenoids, steroids, flavonoids, lignans, miscellaneous

External uses

Antiseptic and analgesic
Guduchyadi oil is used in common skin conditions and gout.

Internal uses

In Digestive system: It controls emesis and thirst, appetizer, digestive, peristaltic, antihelmenthic and antacid. It is useful in thirst, vomiting, loss of appetite, abdominal pain, liver disorders, jaundice, acid peptic disorder, dysentery, sprue and worms. It increases appetite.

In Circulatory system: It is cardiogenic, haemopoetic and acts specifically on vata rakta, Raktavaha srotogami. Administration of *Tinospora cordifolia* plant produces marked but transient fall in blood pressure along with bradycardia and increase force of ventricular contraction

In Respiratory system: It is useful in cough

In Reproductive system: It act as aphrodisiac

In Urinary system: It is anti-diabetic. It has a mild diuretic action and significantly decreases blood urea levels in uremic patients.

In Skin: It is useful in many common skin infections like dermatoses and erysipelas and syphilitic ulcer

In Temperature: Juice of Guduchi is used in chronic fever and typhoid fever. It reduces burning, normalizes temperature, improves appetite and increase the strength.

In Satmikanara: It is known to be a good restorative. The leaves of *Tinospora cordifolia* are rich in proteins and fairly rich in calcium and phosphorus.

Juice of Guduchi is intellect promoting.

Other actions are anti leprotic, anti-pyretic, anti-infective, anti-allergic, hypolipidaemic, osteoprotective, antidepressant, hepatoprotective

Usage

In tridoshas,
Ghee + guduchi- vata shamaka
Sugar + guduchi- pitta shamaka
Honey + guduchi- kapha shamaka

Pharmacology

- Immunomodulatory activity
- Anti-inflammatory activity
- Antidiabetic activity
- Anti-stress and adaptogenic activity
- Anti-bacterial activity

Dose

2.5 to 5 gm of powder
Decotion: 50 -100 ml
Infusion: 30-60 ml⁷

Formulation

Guduchyadi Chooranam
Guduchyadi Kwatha
Guduchi Loha
Amritharishtam
Guduchi taila

Antioxidants

Antioxidants are substances that can prevent or slow damage to cells caused by free radicals, unstable molecules that the body produces as a reaction to environmental and other pressures. They are sometimes called “free radical scavengers”. The sources of anti-oxidants can be natural or artificial. Anti-oxidants neutralise free radicals in bodies and boost overall health.

Neurotrophins

Neurotrophins are the Proteins role in growth, survival and functioning of neurons. They are produced by muscles, glands that neurons innervate and neuroglial cells and neurons. This protein facilitates initial growth and development of nerve cells in CNS & PNS. They Promote survival and repair of nerve cells and play important role in maintenance of nervous tissue and neural transmission. E.g. NGF, BDNF, NT-3

Effect of stress on neurotrophin

Stress is a conspicuous factor of neuronal injury. Stress can trigger degenerative cellular processes in the limbic system. Immobilisation stress reduce mRNA levels for neurotrophin and their high affinity receptors in the brain – hippocampus.

DISCUSSION

Rasayana drugs are found to be rich source of antioxidants. Guduchi is included among the rasyana drugs like medhya rasayana. Medhya rasayanas are CNS modulating. Since there is long history of their effective utilization in the Ayurvedic

therapeutics for the treatments of disability especially stress related ones, this group has a great potential to be adapted at global level or the treatment of stress related disorders. Stress is a conspicuous factor of neuronal injury. Antioxidants can decrease oxidative stress. Studies show that Guduchi has antioxidant and neurotrophic effects.

CONCLUSION

Guduchi mitigates tridosha, detoxifies dhatus and rejuvenates the entire body. Stress reduces the production of mRNA for neurotrophins and cause damage to the neuronal cells. Guduchi has antioxidant effect which reduces stress and its neurotrophic effect prevents neuronal injury.

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Cite this article as:

Fousiya TP et al. Critical Review on the effect of Guduchi as Rasayana in Stress. Int. J. Res. Ayurveda Pharm. 2020;11(6):60-63 <http://dx.doi.org/10.7897/2277-4343.1106185>

Source of support: Nil, Conflict of interest: None Declared

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