

“Review on- Phytochemical Screening of Selected Traditional Medicinal Plants (Entada rheedii and Sarcostemma acidum) for Antistress Activity”

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Abstract—Stress is a major health concern associated with physical, psychological, and biochemical alterations that contribute to several chronic disorders. The growing incidence of stress-related diseases has increased interest in herbal medicines due to their safety, efficacy, and minimal side effects. Medicinal plants possess numerous phytochemicals such as alkaloids, flavonoids, phenolic, tannins, saponins, glycosides, and terpenoids that exhibit antioxidant, adaptogenic, anxiolytic, and neuroprotective activities. *Entada rheedii* and *Sarcostemma acidum* are traditionally used in indigenous systems of medicine for treating various ailments including nervous disorders, inflammation, fatigue, and general weakness. This review summarizes the phytochemical constituents of these medicinal plants and discusses their potential role in antistress activity based on available pharmacological evidence. The review also highlights possible mechanisms involved in stress modulation and identifies future research directions for validating their therapeutic efficacy.

Index Terms—*Entada rheedii*, *Sarcostemma acidum*, phytochemical screening, antistress activity, adaptogens, medicinal plants, antioxidants.

I. INTRODUCTION

Stress is the body's physiological and psychological response to internal or external stimuli that disturb homeostasis. Acute stress is considered beneficial as it prepares the body to respond to challenges; however, prolonged or chronic stress contributes to anxiety, depression, hypertension, cardiovascular disorders, diabetes, immune dysfunction, and neurodegenerative diseases.

Synthetic ant stress medications including benzodiazepines and antidepressants are effective but often produce adverse effects such as dependence,

sedation, tolerance, and withdrawal symptoms. Consequently, herbal medicines have gained significant attention as safer alternatives.

Traditional medicinal plants are rich in bioactive secondary metabolites capable of regulating oxidative stress, inflammation, neurotransmitter balance, and hypothalamic-pituitary-adrenal (HPA) axis function. Among these plants, *Entada rheedii* and *Sarcostemma acidum* have attracted scientific interest due to their ethno medicinal importance and promising phytochemical profiles.

II. OVERVIEW OF STRESS AND ANTISTRESS ACTIVITY

Stress activates the hypothalamic-pituitary-adrenal (HPA) axis, leading to increased secretion of cortisol and catecholamines. Chronic elevation of these hormones results in:

- Oxidative stress
- Lipid peroxidation
- Immune suppression
- Neuroinflammation
- Memory impairment
- Anxiety and depression

Antistress agents protect the body by:

- Reducing cortisol secretion
- Enhancing antioxidant defense systems
- Preventing neuronal damage
- Improving cognitive performance
- Restoring neurotransmitter balance
- Increasing physical endurance

Many medicinal plants possess adaptogenic properties that improve resistance against physical, chemical, and biological stressors.

III. BOTANICAL PROFILE

3.1 *Entada rheedii*

Family-Fabaceae

Common Names

- African Dream Herb



Fig- African Dream Herb

Distribution

Widely distributed in tropical Africa, Madagascar, and parts of India.

Traditional Uses

- Nervous disorders
- Insomnia
- Fever
- Inflammation
- Muscle pain
- General weakness

Various tribal communities use the seeds and roots as traditional remedies.

3.2 *Sarcostemma acidum*

Family-Apocynaceae

Common Names

- Somlata
- Soma Plant



Fig- *Sarcostemma acidum*

Distribution

India, Pakistan, Sri Lanka, and dry tropical regions.

Traditional Uses

- Fatigue
- General debility
- Bronchitis
- Skin disorders
- Wound healing
- Rheumatism

The plant occupies an important place in Ayurvedic medicine.

IV. PHYTOCHEMICAL CONSTITUENTS

A. *Entada rheedii*

Phytochemical investigations have reported:

- Flavonoids
- Alkaloids
- Tannins
- Phenolic compounds
- Saponins
- Glycosides
- Steroids
- Terpenoids

These compounds exhibit:

- Antioxidant activity
- Anti-inflammatory activity
- Neuroprotective effects
- Anxiolytic properties

B. *Sarcostemma acidum*

Reported phytochemicals include:

- Pregnane glycosides
- Flavonoids
- Phenolic compounds
- Sterols
- Terpenoids
- Alkaloids
- Saponins
- Triterpenes

These constituents demonstrate:

- Adaptogenic activity
- Antioxidant effects
- Immunomodulatory activity
- Anti-inflammatory activity

V. PHYTOCHEMICAL SCREENING METHODS

Preliminary phytochemical screening commonly includes qualitative tests for:

Phytochemical	Test
Alkaloids	Dragendorff's Test
Flavonoids	Shinoda Test
Tannins	Ferric Chloride Test
Saponins	Foam Test
Glycosides	Keller-Killiani Test
Steroids	Liebermann-Burchard Test
Phenolics	Ferric Chloride Test
Terpenoids	Salkowski Test

VI. MECHANISM OF ANTISTRESS ACTIVITY

The antistress effects of phytochemicals are attributed to:

Antioxidant Mechanism

- Scavenging free radicals
- Increasing glutathione levels
- Enhancing catalase and superoxide dismutase activity

Neurotransmitter Regulation

- Increasing serotonin
- Increasing dopamine
- Modulating GABA receptors

Anti-inflammatory Action

- Inhibition of TNF- α
- Reduction of IL-6
- Suppression of NF- κ B pathway

HPA Axis Modulation

- Decreasing cortisol secretion
- Restoring adrenal function
- Improving stress adaptation

VII. PHARMACOLOGICAL EVIDENCE

Experimental studies have demonstrated that medicinal plants rich in flavonoids and phenolic can:

- Improve swimming endurance
- Reduce stress-induced gastric ulcers
- Lower serum cortisol
- Restore antioxidant enzymes
- Improve locomotor activity

- Prevent cognitive impairment

Although limited studies have been performed specifically on *Entada rheedii* and *Sarcostemma acidum*, available evidence suggests their phytochemicals possess strong antioxidant and neuroprotective properties that may contribute to antistress activity.

VIII. FUTURE PROSPECTS

Further investigations are needed to:

- Isolate active phytoconstituents.
- Conduct detailed pharmacological studies.
- Elucidate molecular mechanisms.
- Evaluate chronic toxicity.
- Perform clinical trials.
- Develop standardized herbal formulations.

IX. CONCLUSION

Entada rheedii and *Sarcostemma acidum* are valuable medicinal plants containing diverse bioactive phytochemicals including flavonoids, alkaloids, phenolics, saponins, and terpenoids. These constituents exhibit antioxidant, anti-inflammatory, adaptogenic, and neuroprotective activities that may underlie their potential antistress effects. Although traditional use and preliminary pharmacological studies support their therapeutic potential, more systematic phytochemical characterization, mechanistic studies, and well-designed clinical investigations are required before these plants can be developed into standardized antistress herbal medicines.

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