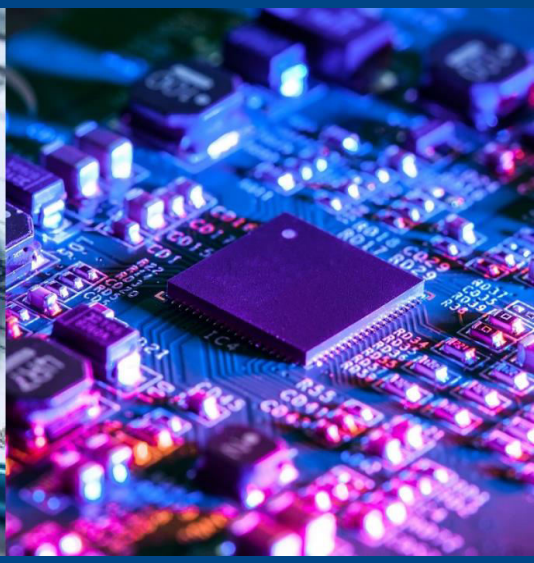
ISSN: 2582-7219





International Journal of Multidisciplinary Research in Science, Engineering and Technology

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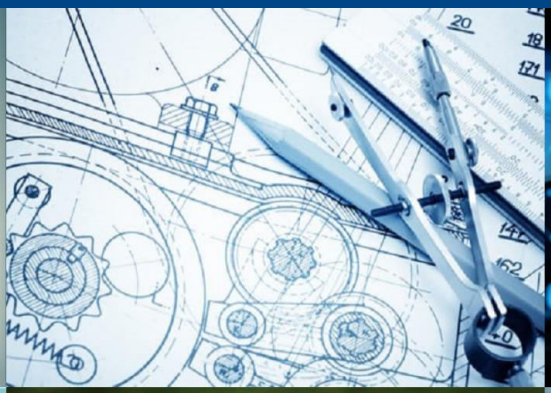

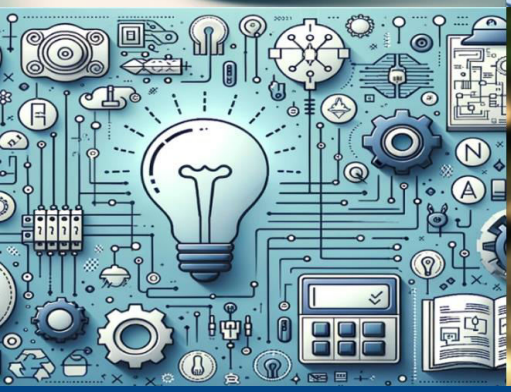

Impact Factor: 9.864

Volume 9, Issue 5, May 2026

© 2026 IJMRSET | Volume 9, Issue 5, May 2026| DOI:10.15680/IJMRSET.2026.0905075

ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 9.864| ESTD Year: 2018|

International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

Preparation and Evaluation of Novel Polyherbal Syrup for Stress Adaptation and Antioxidant Activity

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ABSTRACT: The present research work was carried out to formulate and evaluate a novel polyherbal syrup for stress adaptation and antioxidant activity using medicinal herbs. Herbal medicines are widely accepted because of their therapeutic effectiveness and lower side effects compared to synthetic drugs. In the present study, Bacopa monnieri and Syzygium cumini were selected due to their reported antioxidant and adaptogenic properties.

The herbal extract was prepared by decoction method using powdered forms of Bacopa monnieri and Syzygium cumini. The syrup formulation was prepared using sucrose, glycerin, saccharin sodium, EDTA, orange oil, and distilled water. The prepared syrup was evaluated for organoleptic properties, pH, viscosity, phytochemical screening, stability, and antioxidant potential.

The prepared formulation showed acceptable physicochemical characteristics with reddish-brown colour, sweet taste, characteristic odour, and uniform appearance. The pH of the syrup was found within acceptable range suitable for oral administration. Preliminary phytochemical studies confirmed the presence of flavonoids, alkaloids, tannins, and saponins. The formulation remained stable during the study period without precipitation or phase separation.

The study concluded that the formulated polyherbal syrup possesses promising antioxidant and stress adaptation properties and may serve as a beneficial herbal preparation for health improvement.

KEYWORDS: Polyherbal syrup, Bacopa monnieri, Syzygium cumini, Antioxidant activity, Adaptogenic activity, Herbal formulation.

I. INTRODUCTION

1.1 Herbal Medicines

Medicinal plants have been used traditionally for the treatment and prevention of various diseases. Herbal formulations are gaining importance because of their safety, efficacy, affordability, and reduced adverse effects. Polyherbal formulations are commonly used in traditional systems of medicine due to their synergistic therapeutic activity.

1.2 Stress and Oxidative Stress

Stress is a physiological and psychological condition that affects normal body functions. Continuous stress may lead to anxiety, fatigue, insomnia, and various chronic disorders. Oxidative stress occurs due to imbalance between free radicals and antioxidants in the body, leading to cellular damage and tissue injury.

1.3 Importance of Antioxidants

Antioxidants are substances that help neutralize harmful free radicals and protect the body from oxidative damage. Natural antioxidants present in medicinal plants are considered beneficial in reducing oxidative stress and improving health conditions.

ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 9.864| ESTD Year: 2018|

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1.4 Role of Bacopa monnieri

Bacopa monnieri, commonly known as Brahmi, is an important medicinal herb used in Ayurveda as a brain tonic and adaptogenic agent. The plant contains bacosides, flavonoids, alkaloids, and saponins responsible for antioxidant and neuroprotective activities

1.5 Role of Syzygium cumini

Syzygium cumini, commonly known as Jamun, possesses antioxidant, anti-inflammatory, and protective activities. The seeds contain phenolic compounds, tannins, flavonoids, and anthocyanins which contribute to free radical scavenging activity.

1.6 Importance of Polyherbal Syrup

Syrup dosage forms are easy to administer and improve patient compliance because of pleasant taste and smooth consistency. Polyherbal syrup formulations provide combined therapeutic effects of medicinal plants and improve acceptability for oral administration.

II. MATERIALS AND METHODS

2.1 Materials Used

Plant Materials

- Bacopa monnieri powder
- Syzygium cumini seed powder

Excipients

- Sucrose
- Glycerin
- Saccharin sodium
- EDTA
- Orange oil
- Distilled water
- Red colour

2.2 Instruments Used

- Digital weighing balance
- Beaker
- Measuring cylinder
- Glass rod
- pH meter
- Hot plate
- Funnel
- Filter paper

2.3 Preparation of Herbal Extract

The herbal extract was prepared by decoction method. Accurately weighed quantities of Bacopa monnieri powder and Syzygium cumini seed powder were mixed with distilled water and heated for 20–30 minutes. The mixture was filtered using filter paper and the filtrate obtained was concentrated for formulation development.

2.4 Formulation of Polyherbal Syrup

Formulation Table

Sr. No.	Ingredients	Quantity
1	Bacopa monnieri powder	2 g
2	Syzygium cumini seed powder	2 g

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3	Sucrose	30 g
4	Glycerin	2.5 mL
5	Saccharin sodium	33 mg
6	EDTA	100 mg
7	Orange oil	0.2 mL
8	Red colour	q.s
9	Distilled water	q.s to 50 mL

2.5 Procedure for Syrup Preparation

1. Sucrose was dissolved in warm distilled water to prepare syrup base.
2. The prepared herbal extract was added slowly with continuous stirring.
3. Glycerin, saccharin sodium, EDTA, orange oil, and red colour were added.
4. The final volume was adjusted using distilled water.
5. The syrup was filtered and transferred into amber coloured bottle.

III. EVALUATION PARAMETERS

3.1 Organoleptic Evaluation

Parameter	Observation
Colour	Reddish brown
Odour	Characteristic
Taste	Sweet
Appearance	Uniform syrup

3.2 Determination of pH

The pH of the prepared syrup was determined using digital pH meter and was found suitable for oral administration.
Observed pH value: 5.9

3.3 Viscosity Study

The viscosity of the prepared syrup was evaluated by observing flow characteristics. The formulation showed moderate viscosity and smooth consistency.

3.4 Sability Study

The syrup formulation was stored at room temperature and observed for 15 days. No precipitation, colour change, or phase separation was observed during the study period.

3.5 Pytochemical Screening

Preliminary phytochemical screening showed the presence of:

- Alkaloids
- Flavonoids
- Tannins
- Saponins

3.6 Atioxidant Activity

The antioxidant activity of the prepared syrup may be attributed to the presence of flavonoids and phenolic compounds present in Bacopa monnieri and Syzygium cumini.

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IV. RESULTS AND DISCUSSION

The prepared polyherbal syrup showed satisfactory organoleptic and physicochemical properties. The formulation possessed acceptable colour, odour, taste, and appearance suitable for oral administration. The pH value was found within acceptable range indicating stability of the formulation.

The phytochemical screening confirmed the presence of flavonoids, alkaloids, tannins, and saponins which are responsible for antioxidant activity. The syrup remained stable during the storage period without precipitation or phase separation.

The antioxidant activity of the formulation may be due to synergistic activity of Bacopa monnieri and Syzygium cumini. The formulation demonstrated acceptable pharmaceutical characteristics and potential adaptogenic properties.

V. CONCLUSION

The present study successfully formulated and evaluated a novel polyherbal syrup for stress adaptation and antioxidant activity. The prepared syrup showed satisfactory physicochemical properties, good stability, and positive phytochemical screening results.

The formulation may serve as a beneficial herbal preparation due to its antioxidant and stress adaptation potential. Further pharmacological and clinical studies may be carried out for detailed therapeutic evaluation.

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