

DEVELOPMENT AND EVALUATION OF POLYHERBAL CHURNA FOR MANAGEMENT OF DEPRESSION

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ABSTRACT

Depression is a widely observed mental health condition that affects emotional stability, thinking ability, and daily activities of an individual. In recent years, herbal medicines have gained significant attention as a safer alternative to synthetic drugs due to their fewer side effects and better patient acceptability. *Withania somnifera* (Ashwagandha), *Bacopa monnieri* (Brahmi), *Trigonella foenum-graecum* (Fenugreek seeds), and *Piper nigrum* (Black pepper) are well-known medicinal plants reported to possess antidepressant, adaptogenic, and neuroprotective properties. The present work was carried out to formulate and evaluate a herbal churna containing powdered forms of Ashwagandha, Brahmi, Fenugreek seeds, and Black pepper for the management of depression. The raw materials were cleaned, dried, and finely powdered using standard

procedures. The powders were then mixed in suitable proportions to obtain a uniform herbal formulation. The prepared formulation was evaluated for various parameters such as organoleptic properties (color, odor, taste), particle size, bulk density, and flow properties. The results indicated that the churna had acceptable characteristics and good stability under normal storage conditions. Hence, it can be suggested that the prepared herbal churna may be useful in the supportive management of depression.

KEYWORDS: Ashwagandha, Brahmi, Fenugreek seeds, Black pepper, herbal churna, depression, antidepressant activity.

1. INTRODUCTION

Depression is a mental health condition in which a person experiences persistent sadness, low

mood, and loss of interest in daily activities due to disturbances in emotional and psychological balance. This condition can vary in severity from mild to severe and may affect thoughts, behavior, and overall functioning. It may develop gradually or suddenly and can interfere with personal, social, and academic life. The condition is usually associated with an imbalance of neurotransmitters such as serotonin, dopamine, and norepinephrine in the brain. If not managed properly, depression may lead to serious emotional and physical health problems.

Depression is a common mental disorder and affects people of different ages, but it is more frequent in adolescents and adults. Factors such as stressful life events, genetic predisposition, chronic illness, lack of social support, and substance abuse can increase the risk of depression.

Common types of depression include: Major depressive disorder (most common), Persistent depressive disorder, Bipolar disorder, Seasonal affective disorder.

1.1 Withania somnifera (Ashwagandha)

Withania somnifera, commonly known as Ashwagandha, is a medicinal plant belonging to the family Solanaceae. It is widely found in India, especially in dry and subtropical regions. The plant is a small shrub, and its roots are mainly used for medicinal purposes. It has been used in traditional Ayurvedic medicine for a long time due to its multiple health benefits.

The roots contain important bioactive compounds such as withanolides, alkaloids, and saponins which contribute to its therapeutic effects. It is commonly used to reduce stress, improve physical and mental strength, and enhance overall well-being. Due to its adaptogenic and neuroprotective properties, Ashwagan

1.2 Bacopa monnieri (Brahmi)

Bacopa monnieri, commonly known as Brahmi, is a small creeping herb belonging to the family Plantaginaceae. It grows in wet and marshy areas across India and has been extensively used in traditional medicine for brain-related conditions. The whole plant is used for its medicinal value.

It contains important compounds such as bacosides, alkaloids, and flavonoids which are responsible for its pharmacological actions. It is mainly used to improve memory, enhance cognitive function, and reduce anxiety. Due to its calming and neuroprotective properties,

Brahmi is widely used in herbal formulations like powders and extracts for the management of depression and other mental health conditions.

1.3 *Trigonella foenum-graecum* (Fenugreek seeds)

Trigonella foenum-graecum, commonly known as Fenugreek, belongs to the family Fabaceae. It is widely cultivated in India and other parts of the world. The seeds of the plant are commonly used for both culinary and medicinal purposes.

Fenugreek seeds contain important constituents such as alkaloids, flavonoids, saponins, and fibers which contribute to their therapeutic effects. They are known to help in improving digestion, regulating metabolism, and supporting overall health. Due to their antioxidant and mild neuroprotective properties, fenugreek seeds are also included in herbal formulations for supportive management of stress and related conditions.

1.4 *Piper nigrum* (Black pepper)

Piper nigrum, commonly known as Black pepper, belongs to the family Piperaceae. It is widely cultivated in India, especially in tropical regions. The dried fruits (peppercorns) are used as a spice as well as for medicinal purposes.

Black pepper contains an important active compound called piperine along with other alkaloids and essential oils. It is known for enhancing digestion, improving bioavailability of other drugs, and possessing antioxidant properties. Piperine also plays a role in enhancing the absorption of herbal components, making it an important ingredient in polyherbal formulations used for improving overall effectiveness, including in the management of depression.

Asparagus racemosus and *Convolvulus pluricaulis* have been used in traditional medicine for many years due to their beneficial effects on health. *Asparagus racemosus* is commonly used to improve strength, reduce stress, and support the immune system. It is also helpful in conditions like inflammation, weakness, and hormonal imbalance. On the other hand, *Convolvulus pluricaulis* is mainly used for brain-related functions such as improving memory, reducing anxiety, and promoting calmness. It is also useful in managing stress and sleep-related problems.

Both plants contain important phytochemical constituents. *Asparagus racemosus* contains saponins, alkaloids, flavonoids, and glycosides, while *Convolvulus pluricaulis* contains

alkaloids, flavonoids, and other active compounds. These components are responsible for their antioxidant, neuroprotective, and calming properties. Because of these properties, both plants are widely used in herbal preparations for the management of depression and related disorders.

Asparagus racemosus is commonly found in tropical and subtropical regions, while *Convolvulus pluricaulis* grows in different parts of India, especially in dry and open areas.

Kingdom: Plantae.

Order: Asparagales / Solanales.

Genus: *Asparagus* / *Convolvulus*

2. METHODS

2.1 Experimental Requirements

Withania somnifera (Ashwagandha), *Bacopa monnieri* (Brahmi), *Trigonella foenum-graecum* (Fenugreek seeds), and *Piper nigrum* (Black pepper) were obtained from the local market of Marotiya Bazar, Indore. All the raw materials were cleaned, dried, and used for the preparation of the herbal churna. No chemical preservatives were required as it is a dry powder formulation.

2.2 List of Equipment

Sieve, mixer grinder, weighing balance, mortar and pestle, and airtight container were used for the preparation and storage of the formulation.



Fig. 1: Dry Powder of *Asparagus racemosus*. Fig. 2: Dry Powder of *Convolvulus pluricaulis*



Fig. 3: Decoction method.



Fig. 4: Solubility of extract c).

2.3 Formulation of churna

All the crude drugs were properly cleaned to remove dust and foreign particles. The raw materials were then dried under shade to preserve their active constituents. After complete drying, each ingredient was separately powdered using a mixer grinder.

The powdered drugs were passed through a suitable sieve to obtain a fine and uniform particle size. All the powders were then weighed accurately and mixed in equal proportions using a mortar and pestle to ensure uniform mixing.

The prepared churna was finally stored in an airtight container to protect it from moisture, light, and contamination.

Table No. 1: Formulation of Polyherbal Churna.

Material	F1	F2	F3
Withania somnifera	10.5gm	9gm	9gm
Bacopa monnieri	7.5gm	9gm	10.5gm
Trigonella foenum- graecum	7.5gm	6gm	4.5gm
Sodium Benzoate	0.2	0.2	0.2
Piper nigrum	7.5gm	6gm	6gm

2.4 Evaluation Parameters of Polyherbal Churna

2.4.1 Organoleptic Properties

The prepared churna containing *Withania somnifera*, *Bacopa monnieri*, *Trigonella foenum-graecum*, and *Piper nigrum* was evaluated for its colour, appearance, odour, and taste. The churna was found to be light brown in colour, fine in appearance, having characteristic odour

and slightly bitter-pungent taste.

2.4.2 Test for Flavonoids

A small quantity of the churna was mixed with distilled water and filtered. To 1 ml of the filtrate, 2 ml of 1% sodium hydroxide solution was added. Formation of yellow colour indicated the presence of flavonoids.

2.4.3 Determination of Particle Size

The particle size of the churna was determined by passing it through a standard sieve. Uniform particle size was obtained, indicating proper grinding and sieving.

2.4.4 Bulk Density

A known quantity of churna was taken in a measuring cylinder and the volume was noted. Bulk density was calculated as the ratio of mass to volume of the powder.

2.4.5 Flow Properties

The flow properties of the churna were evaluated by observing its ability to flow through a funnel. Good flow property indicated proper mixing and suitable particle size distribution.

2.4.6 Moisture Content

The moisture content of the churna was determined by drying a known quantity of sample and noting the loss in weight. Low moisture content indicated better stability and shelf life.

2.4.7 Stability Study

The prepared churna was stored in an airtight container at room temperature. The samples were observed at different intervals (0, 7, 14, and 21 days) for any changes in colour, odour, and appearance. No significant changes were observed, indicating good stability of the formulation.

RESULT AND DISCUSSION

Table No. 2: Organoleptic characteristics features of syrup.

Features	F1	F2	F3
Colour	Light Brown	Light Brown	Light Brown
Odor	Characteristics	Characteristics	Characteristics
Test	Bitter	Bitter	Bitter



Fig.No.5: Estimation of Ph.



Fig.No.6: Determination of viscosity.



Fig.No.7: Determination of density.

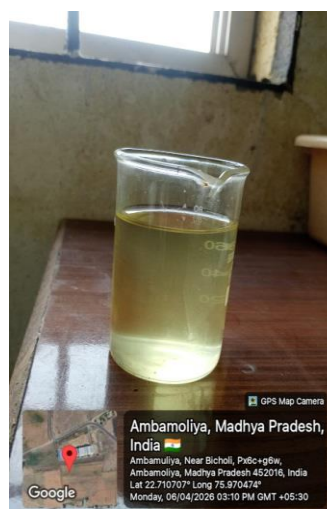


Fig.No.8: clarity Test.

Table No. 3: Estimation of pH, solubility, Density & Viscosity.

Features	F1	F2	F3
Ph	5.8	5.9	5.7
Solubility	Soluble in methanol and water	Soluble in methanol and water	Soluble in methanol and water
Stability	Stable	Stable	Stable
Flow properties	Good	Good	Goof

SUMMARY

Depression is a common mental health disorder that affects mood, thoughts, and daily functioning. Symptoms may include persistent sadness, loss of interest, fatigue, anxiety, and sleep disturbances. Its causes are associated with genetic, biological, psychological, and environmental factors.

Herbal medicines such as *Withania somnifera* (Ashwagandha), *Bacopa monnieri* (Brahmi), *Trigonella foenum-graecum* (Fenugreek seeds), and *Piper nigrum* (Black pepper) are widely used to support mental health. Management of depression includes lifestyle modifications, counseling, and the use of supportive herbal formulations like churna, which offer a natural and safe approach for promoting mental well-being. *Withania somnifera* is a well-known medicinal plant whose roots are widely used in traditional medicine.

Trigonella foenum-graecum seeds are known for their nutritional and medicinal value. They contain alkaloids, flavonoids, and saponins which provide antioxidant and supportive health benefits. They help in improving metabolism, reducing fatigue, and supporting overall well-being, which indirectly aids in managing stress-related conditions. *Piper nigrum* contains piperine as its major active constituent, along with essential oils and alkaloids. It is known to enhance digestion and improve the bioavailability of other herbal drugs. Piperine also exhibits antioxidant and mild neuroprotective properties, contributing to better effectiveness of polyherbal formulations.

CONCLUSION

Depression is a common mental health disorder that can significantly affect an individual's quality of life. If not managed properly, it may lead to serious emotional and physical complications. Herbal medicines play an important role in supporting mental health due to their safety and effectiveness.

Withania somnifera, *Bacopa monnieri*, *Trigonella foenum-graecum*, and *Piper nigrum* possess various pharmacological properties such as adaptogenic, neuroprotective, antioxidant, and cognitive-enhancing effects. These properties help in reducing stress, improving mood, and maintaining mental balance.

Therefore, the use of these medicinal plants in the form of polyherbal churna can be considered a natural, safe, and beneficial approach for the supportive management of

depression and promotion of overall mental well-being.

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