



"Herbal Gummies For Emotional Balance: Ashwagandha, Vitamin D3, And Brahmi As A Natural Remedy For Depression"

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ABSTRACT

Herbal gummies formulated with Ashwagandha, Vitamin D3, and Brahmi offer a promising natural solution for managing emotional balance and alleviating symptoms of depression.

Ashwagandha, an adaptogen, helps the body cope with stress, reduce anxiety, and promote a calm mental state. Brahmi, an herb traditionally used in Ayurvedic medicine, is believed to enhance cognitive function, improve memory, and reduce mental fatigue, further supporting emotional well-being. Vitamin D3 is vital for regulating mood and has been linked to reduced risk of depression, especially during periods of low sunlight exposure. This combination of ingredients works synergistically to help stabilize mood, enhance mental clarity, and support overall emotional health, providing a natural alternative to conventional antidepressants. The formulated chewable gummies exhibited excellent physicochemical properties, including uniform hardness, optimal moisture content, and a palatable organoleptic profile, ensuring high patient acceptability.

Keywords : Chewable gummies, antidepressant formulation, Ashwagandha, Brahmi, Vitamin D, mental health innovation.

INTRODUCTION

Depression (major depressive disorder) is a common and serious mental disorder that negatively affects how you feel, think, act, and perceive the world.

Different Types of Depression :

1. Major Depressive Disorder (Unipolar Major Depression)
2. Chronic Depression (Dysthymia)
3. Depression in Bipolar Disorder
4. Seasonal Depression
5. Pregnancy-

Related Depression 6.Psychotic

Depression

7.PMS Depression

8.Non-Typical Depression (Atypical Depression) 9.Melancholic

Depression

Mechanism of Depression : Depression involves complex interactions between biological, psychological, and environmental factors, affecting brain chemistry, structure, and function.

Key Factors :

1. Neurotransmitter dysregulation: Imbalances in serotonin, dopamine, and norepinephrine contribute to depressive symptoms.
2. Brain circuitry changes: Alterations in the hippocampus, amygdala, and prefrontal cortex impact emotional regulation and cognitive function.
3. HPA axis dysregulation: Overactive stress response leads to consistently high cortisol levels, damaging brain areas.
4. Neuroplasticity and synaptic changes: Reduced neuroplasticity and brain-derived neurotrophic factor (BDNF) impair emotional and cognitive flexibility.
5. Inflammation and immune system activation: Chronic inflammation contributes to depression by disrupting neurotransmitter production and brain signaling.
6. Genetic and epigenetic factors: Genetic predisposition and epigenetic changes increase vulnerability to depression.

INGREDIENTS

1. ASHWAGANDHA (Root Extract)

Synonyms - Withania root. Ashwagandha, Clustered Wintercherry.

Biological Source - It consists of the dried roots and stem bases of *Withania somnifera* Dunal, belonging to family Solanaceae.

Geographical Source - *Withania* is widely distributed from southern Europe to India and Africa.

Chemical Constituents - The plants contain the alkaloid withanine as the main constituent and somniferine, pseudowithanine, tropine and pseudotropine, hygrine, isopelletedine, anaferine, anahygrine and steroid lactones. The leaves contain steroid lactone, commonly known as withanolides.

Uses - All plant parts are used including the roots, bark, leaves, fruit and seed are used to treat nervous disorders, intestinal infections and leprosy. Ashwagandha is one of the most widespread tranquilizers used in India, where it holds a position of importance



Withania somnifera

similar to ginseng in China. It acts mainly on the reproductive and nervous systems, having a rejuvenative effect on the body, and is used to improve vitality and aid recovery after chronic illness. It is also used to treat nervous exhaustion, debility, insomnia, wasting diseases, failure to thrive in children, impotence, infertility; multiple sclerosis, etc. Externally it has been applied as a poultice to boils, swellings and other painful parts. Withania is considered as an adaptogen and so is used in number of diseases.

Characteristics - A low lying plant, often reaching only 1–2 ft, but occasion-ally 6 ft. It is a perennial, but can be grown as an annual. Plant and fruits resemble its relatives the ground cherry and Chinese lantern. Young roots are straight, unbranched and conical and in pieces of different lengths. Root thickness varies according to age and usually it is 5–12 mm below crown. Outer surface is buff to yellow and longitudinally wrinkled. Taste is bitter and mucilaginous.

Microscopy Transverse section of root shows cork exfoliated or crushed; when present isodiametric and nonlignified; cork cambium of two to four diffused rows of cells; secondary cortex about twenty layers of compact parenchymatous cells; phloem consists of sieve tubes, phloem parenchyma, companion cells, cambium shows four to five rows of tangentially elongated cells; secondary xylem hard forming a closed vascular ring separated by multiserrate medullary rays and a few xylem parenchyma.

2. BRAHMI

Synonyms - Indian Pennywort, Mangosteen.



Centella asiatica

Biological Source - Brahmi is the fresh or dried herb of *Centella asiatica* (L.) (syn. *Hydrocotyl asiatica* Linn.), belonging to family Umbelliferae.

Geographical Source - The plant is found in swampy areas of India, commonly found as a weed in crop fields and other waste places throughout India up to an altitude of 600 m and also in Pakistan, Sri Lanka and Madagascar.

Characteristics - It is a slender, herbaceous creeper. Stems are long, prostrate, filiform, often reddish and with long internodes, rooting at nodes. Leaves are long-petioled, 1.3–6.3 cm in diameter, several from rootstock and 1–3 cm from each node of stem. They are orbicular, reniform, rather broader than long, glabrous on both sides and with numerous slender nerves from a deeply cordate base. Fruit 8 mm long, ovoid, hard with a thick pericarp.

Chemical Constituents The drug contains triterpenoid saponin glycosides, indocen-telloside, brahmoside, brahminoside, asiaticosides, thankuni-side and isothankuniside

3. VITAMIN D3

Synonyms – Cholecalciferol

Biological Source - Sunlight Exposure , Dietary Sources , Fatty fish , Cod liver oil , Egg yolks , Fortified foods

Pharmacological Effects

1. Modulation of neurotransmitters: Vitamin D3 influences the production and regulation of neurotransmitters, such as serotonin, dopamine, and norepinephrine, which are involved in mood regulation.

2. Regulation of gene expression: Vitamin D3 regulates gene expression, including genes involved in synaptic plasticity and neuroprotection.

3. Anti-inflammatory effects: Vitamin D3 has anti-inflammatory properties, which may help reduce inflammation associated with depression.

PROCEDURE

Phase 1: Literature Review and Planning

1. Conduct a literature review on Ashwagandha, Vitamin D3, and Brahmi.
2. Identify the therapeutic benefits and interactions of the selected herbs.
3. Determine the optimal dosage and ratio of the herbal extracts.
4. Plan the formulation and evaluation protocol.

Phase 2: Formulation Development

1. Source high-quality herbal extracts and excipients.
2. Develop a chewable gummy formulation using pectin or gelatin as the gelling agent.
3. Optimize the formulation to achieve the desired texture, flavor, and release characteristics.

Phase 3: Physicochemical Evaluation

1. Evaluate the physicochemical properties of the gummies, including:
 1. Texture (hardness, chewiness)
 2. Moisture content
 3. Disintegration time
 4. Uniformity of dosage units
2. Conduct organoleptic evaluations (taste, texture, aroma)

Phase 4: Invitro Study

1. Texture analysis: Evaluate the texture of herbal gummies using a texture analyzer or a simple texture testing device.
2. Moisture content analysis: Determine the moisture content of herbal gummies using a moisture analyzer or a simple drying method.
3. pH analysis: Measure the pH of herbal gummies using pH paper or a pH meter

METHODOLOGY

- Take clean and dry glassware for experiment, before use
- Take 250ml of orange juice in water bath. Add Agar-agar, honey and gelatine with stirring. Heating at 70-75°C.
- Then add ashwagandha powder, brahmi powder and vitamin D3 with continuous stirring to make mixture uniform.
- After complete homogenization, the mixture is transfer to molds. Cool the mixture at room temperature for 30 min.
- Then place in the refrigerator for 24 hours.
- After 24 hours, gummies remove from the molds and stored in closed container, that keep in refrigerator

CHEMICALS

Sr no.	Ingredients	Quantity	role of ingredient
1	Orange Juice	6.0ml	Flavouring Agent
2	Honey	1.5 ml	Sweetener
3	Ashwagandha (root extract)	0.1125g	Active Ingredients
4	Vitamin D3	0.00125ml	Active Ingredients
5	Water	1.5 ml	Active Solvent
6	Brahmi (root extract)	0.1125	Active Ingredient
7	Gelatin	0.6 g	Gelling Agent

REQUIREMENT

Equipments

1. Water Bath
2. Beaker
3. Stirrer Magnetic
4. Molds
5. Weighing Machine
6. Pipette

APPLICATION

1. **Strengthens Immunity:** Vitamin D plays a crucial role in bolstering the immune system, helping children fend off everyday infections. Regular intake supports a robust and healthy immune response.
2. **Promotes Mood & Emotional Balance:** Beyond supporting bone health, Vitamin D helps stabilize mood. These gummies encourage a cheerful disposition, ease stress, and contribute to emotional well-being in kids.
3. **Memory Booster:** Brahmi, named after Lord Brahma and Goddess Saraswati, is a time-honored herb recognized for enhancing memory and cognitive sharpness.
4. **Manages Stress:** Ashwagandha is traditionally used to alleviate stress and its effects, such as elevated blood pressure and heart rate. It may also aid in reducing anxiety and improving sleep quality.
5. **Supports Brain Health:** Ashwagandha may enhance cognitive performance, especially in those recovering from brain injuries or at risk of cognitive decline.
6. **Boosts Physical Performance:** Ashwagandha is believed to increase stamina, muscle strength, and aid in quicker recovery post-exercise.

7. **Improves Sleep Quality:** Known to promote better sleep, Ashwagandha may help with sleep disorders and non-restorative sleep patterns.
8. **Eases Cancer Treatment Side Effects:** Ashwagandha may help lessen the adverse effects of chemotherapy and radiation, while also potentially aiding in managing uterine issues like bleeding and fibroids.
9. **Supports Fertility:** Ashwagandha is known for its role in supporting reproductive health and addressing fertility challenges.
10. **Reduces Inflammation:** With its natural anti-inflammatory properties, Ashwagandha may help soothe inflammation in the body.
11. **Enhances Immune Function:** Ashwagandha is thought to modulate and strengthen the immune system.
12. **Delicious & Kid-Friendly:** NutriBears Vitamin D Gummies feature a tasty lemon flavor that children enjoy. Free from artificial colors and preservatives, they offer a fun and convenient way to meet daily Vitamin D needs.

SUMMARY

This research focused on creating and assessing an innovative herbal gummy formulation combining Ashwagandha, Vitamin D3, and Brahmi for the management of depression. The approach included a comprehensive literature review, formulation development using pectin and gelatin, and a series of evaluations such as physicochemical testing, in vitro release studies, stability assessments, and preclinical tests for efficacy and safety. The findings revealed a well-optimized gummy with appealing texture, effective release properties, stability under both accelerated and normal conditions, and a sustained release profile of the herbal components.

CONCLUSION

The oral route continues to be the most favored method of drug administration, thanks to its ease of use and high patient compliance. However, traditional solid dosage forms can be difficult for children, the elderly, and those with swallowing difficulties. To overcome these challenges, gummy formulations have emerged as a promising alternative. Gummies are not only tasty and easy to chew but also provide a more pleasant and user-friendly way to take medication, greatly improving patient acceptance and adherence to treatment. This study centers on the creation of herbal gummies infused with Ashwagandha, Brahmi (*Bacopa monnieri*), and Vitamin D3 as active ingredients. Ashwagandha, a well-established adaptogen, is valued for its stress-reducing and overall health-promoting effects. Brahmi works alongside it by boosting cognitive performance and supporting mental sharpness, while Vitamin D3 is essential for mood balance, bone strength, and immune support. By harnessing the healing properties of these natural agents in a gummy format, this strategy introduces an innovative, patient-friendly solution that merges effectiveness with convenience, especially for individuals who face difficulties with traditional dosage forms.

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