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# Development and Evaluation of Aphrodisiac Herbal Chocolate for Mood Elevation and Wellness Enhancement

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Abstract: The incorporation of traditional herbal medicine into functional food systems offers a new method of improving mental well-being. This research centers on the creation and assessment of a new herbal mood-enhancing chocolate product that is supplemented with scientifically known adaptogenic and neuroactive plants. The product is rooted in a chocolate matrix of dark chocolate made with cocoa powder, milk powder, natural sweeteners, and cocoa butter, fortified with a robust herbal blend of: Maca root (Lepidium meyenii), Shatavari (Asparagus racemosus), Safed Musli (Chlorophytum borivilianum), Gokshura (Tribulus terrestris), Mucuna pruriens, Ashwagandha (Withania somnifera), Saffron (Crocus sativus), Kamraj (Bombax ceiba), and Kala Panja. They were chosen for their reported antidepressant, adaptogenic, anxiolytic, and dopaminergic effects.

The herbal powders were homogenously mixed with melted cocoa butter to aid in the solubilization of fat-soluble phytochemicals, and further incorporated into the chocolate mass. This process optimally extracted bioactive compounds like alkaloids, flavonoids, saponins, and L-DOPA. The formulation was thoroughly tested for organoleptic characteristics (taste, appearance, aroma, and texture), physicochemical properties (melting point, pH, moisture content, and hardness), phytochemical content (quantification of active compounds), antioxidant activity (DPPH assay), and microbial stability.

The end-product showed good sensory characteristics and stability during storage without any noticeable decline in its bioactive potential. Phytochemical evaluation was successful in detecting bioactive components like L-DOPA, flavonoids, and phenolics, while antioxidant evaluation indicated notable free radical scavenging capacity, reinforcing the product's claimed health benefits. The microbial stability of the product guaranteed its safety and shelf life, thus presenting a sound functional food.

The findings indicate that the developed herbal chocolate is not just a tasty treat but also a nutraceutical product with the potential to induce mood elevation, increase stress resilience, and induce mental clarity, and thus a highly viable addition to the emerging area of functional foods for enhancing mental health and overall well-being.

**Keywords**: Herbal chocolate, mood elevation, adaptogens, aphrodisiac, Mucuna pruriens, Ashwagandha, phytochemicals, functional food, antioxidant activity, nutraceutical formulation

## I. INTRODUCTION

The term "chocolate" finds its origin in the word "coca," with its historical roots dating back to approximately 400 AD. Derived from the seeds of the cacao plant, scientifically known as Theobroma cacao, chocolate has long been appreciated not only as a delicacy but also for its nutritional and therapeutic attributes. The cacao seeds are rich in antioxidants and essential minerals, and they undergo a series of processes including fermentation, roasting, and mechanical grinding to yield two primary products: cocoa powder and cocoa butter. These components serve as the

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#### Volume 5, Issue 11, May 2025



foundation of various chocolate formulations, particularly dark chocolate, which is known for its health-enhancing phytoconstituents.

Chocolate contains a range of bioactive compounds such as phenylethylamine (PEA), flavonoids, methylxanthines (like theobromine and caffeine), sterols, and aliphatic alcohols. Phenylethylamine, often termed the "love drug," is a naturally occurring trace amine in the human brain that is released during feelings of euphoria and affection. It acts similarly to amphetamines by promoting the release of neurotransmitters like dopamine and serotonin. This contributes to the well-documented mood-elevating effects of chocolate. Furthermore, the flavonoids and polyphenolic compounds present in cocoa provide strong antioxidant and anti-inflammatory benefits, which can enhance cognitive performance, reduce stress, and support cardiovascular health.

In this study, we harness these natural mood-enhancing properties of dark chocolate as a base to deliver a novel herbal formulation comprising scientifically validated medicinal herbs traditionally used to promote mental well-being, reduce anxiety, and enhance sexual vitality. The herbs incorporated in the chocolate formulation include Maca root (Lepidium meyenii), Shatavari (Asparagus racemosus), Safed Musli (Chlorophytum borivilianum), Gokshura (Tribulus terrestris), Mucuna pruriens, Ashwagandha (Withania somnifera), Cinnamon (Cinnamomum verum), Saffron (Crocus sativus), Kamraj (Bombax ceiba), and Kala Panja. These botanicals are known for their adaptogenic, antidepressant, anxiolytic, neuroprotective, and aphrodisiac effects, making them ideal candidates for functional food integration aimed at mood modulation and stress management.

The herbal powders were blended into melted cocoa butter to enhance the solubilization and absorption of lipophilic phytochemicals, followed by incorporation into a standardized dark chocolate matrix. The final formulation underwent extensive evaluation for its organoleptic qualities (appearance, texture, aroma, and taste), physicochemical properties (melting point, pH, moisture content, and hardness), phytochemical screening (for alkaloids, flavonoids, saponins, and L-DOPA), antioxidant capacity (DPPH assay), and microbial stability. Additionally, morphological studies using optical microscopy and SEM provided insight into the uniformity and integration of herbal compounds within the chocolate structure.

This research highlights the potential of chocolate as a functional food vehicle for the delivery of bioactive herbs with proven psychological and physiological benefits. By integrating traditional botanical wisdom with modern confectionery science, this study aims to offer a palatable, safe, and effective nutraceutical formulation designed to support mood elevation, stress relief, and sexual health.

### Pharmacognostic Profile of Selected Medicinal Herbs:

The formulation utilized ten medicinal herbs with established ethnopharmacological uses. Each herb was selected based on its adaptogenic, neuroprotective, or aphrodisiac properties. Detailed pharmacognostic features and chemical constituents are as follows:

Maca Root (Lepidium meyenii): Morphology: A tuberous root resembling a radish, typically yellow, red, or black in color.

• Chemical Constituents: Macamides, macaenes, glucosinolates, sterols, alkaloids.

• Pharmacological Action: Adaptogen, energy enhancer, antidepressant, aphrodisiac.

Shatavari (Asparagus racemosus): Morphology: Climbing plant with slender, needle-like leaves and tuberous roots.

- Chemical Constituents: Shatavarins (steroidal saponins), flavonoids, polyphenols, mucilage.
- Pharmacological Action: Anti-stress, immunomodulator, mood stabilizer, aphrodisiac.

Safed Musli (Chlorophytum borivilianum): Morphology: Herbaceous plant with linear leaves and white tuberous roots.

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- Chemical Constituents: Saponins, alkaloids, polysaccharides, mucilage.
- Pharmacological Action: Tonic, aphrodisiac, anti-fatigue, adaptogen.

Gokshura (Tribulus terrestris): Morphology: Creeping herb with compound leaves and spiny fruit.

- Chemical Constituents: Protodioscin (saponin), alkaloids, flavonoids, tannins.
- Pharmacological Action: Androgenic, mood stabilizer, libido enhancer.

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International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal

#### Volume 5, Issue 11, May 2025



Mucuna pruriens: Morphology: Climbing legume with long, hairy pods and purple flowers.

- Chemical Constituents: L-DOPA, alkaloids, flavonoids, tannins.
- Pharmacological Action: Dopaminergic, mood elevator, neuroprotective.

Ashwagandha (Withania somnifera): Morphology: Shrub with ovate leaves and red berry-like fruit; roots used.

- Chemical Constituents: Withanolides, sitoindosides, alkaloids.
- Pharmacological Action: Adaptogen, anxiolytic, cognitive enhancer, libido booster.

**Cinnamon (Cinnamomum verum):** Morphology: Thin, brown inner bark of a tropical evergreen tree. Chemical Constituents: Cinnamaldehyde, eugenol, coumarins, flavonoids.

• Pharmacological Action: Mood enhancer, antioxidant, circulatory stimulant.

**Saffron (Crocus sativus):** Morphology: Dried red stigmas of a purple flower. Chemical Constituents: Crocin, safranal, picrocrocin, flavonoids.

• Pharmacological Action: Antidepressant, memory booster, anxiolytic.

Kamraj (Bombax ceiba): Morphology: Deciduous tree with thorny trunk and red flowers.

- Chemical Constituents: Flavonoids, tannins, glycosides, sterols.
- Pharmacological Action: Aphrodisiac, mood enhancer, general tonic.

Kala Panja: Morphology: Tubers or roots traditionally used in Ayurveda.

- Chemical Constituents: Alkaloids, triterpenoids, phytosterols.
- Pharmacological Action: Nervine tonic, rejuvenator, libido enhancer.

These herbs were incorporated based on their synergistic potential to support mental wellness and adaptogenic capacity, further enhanced through their delivery via a palatable chocolate matrix.

### Functional Role of Dark Chocolate as a Nutraceutical Base

Dark chocolate has long been utilized in various medical preparations due to its natural properties. One of its key attributes is its antioxidant capacity. The primary antioxidant phytonutrient found in cocoa beans is polyphenols. Among the most abundant flavonoids in cocoa powder are catechins and anthocyanins. Consumption of chocolate has been linked to a decrease in cardiovascular activity, earning it the designation of a functional food. Notably, among the different types of chocolate, dark chocolate is favoured for its elevated levels of flavonoids and polyphenols [8].

Moreover, dark chocolate contains pure cocoa extract, whereas white chocolate includes milk and its derivatives, leading to a higher potential for contamination in white chocolate. Dark chocolate also contains lower levels of fats and sugars compared to other varieties. This contributes to its extended shelf life and makes it a superior candidate for medicinal and functional food applications. Given its rich bioactive profile and better stability, dark chocolate was chosen as the base matrix for incorporating therapeutic herbs in this study [9].

## Preparation of Herbal Mood-Boosting Chocolate

The creation of the herbal mood-enhancing chocolate integrates the dense bioactive content of dark chocolate with a specially chosen combination of medicinal herbs that are renowned for their mood-enhancing, aphrodisiac, and adaptogenic properties. Dark chocolate is the perfect base because it contains high levels of antioxidants and can ensure the stability of herbal ingredients. In this concept, several herbs, which are conventionally applied to enhance mental health, relieve anxiety, and enhance sexual vitality, are integrated to offer an overall functional food with mood-lifting effects.

### Ingredients:

The following ingredients were used to prepare 100 grams of the herbal mood-elevating chocolate:

Sr	Ingredients	Quantity(per 100gn	n
no.		batch size)	
1	Cocoa Powder	40	
2	Cocoa Butter	30	

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3	Milk Powder	20
4	Maca Root (Lepidium meyenii)	1.5
5	Shatavari (Asparagus racemosus)	1
6	Safed Musli (Chlorophytum borivilianum)	0.5
7	Gokshura (Tribulus terrestris)	0.5
8	Mucuna pruriens	0.5
9	Ashwagandha (Withania somnifera)	1
10	Cinnamon (Cinnamomum verum)	0.5
11	Saffron (Crocus sativus)	0.25
12	Kamraj (Bombax ceiba)	0.5
13	Kala Panja	0.25
14	Natural Sweeteners	As required

Table 1: Ingredients Used in the Development of Herbal Mood-Enhancing Chocolate

#### **Rationale Behind Ingredient Selection:**

- Cocoa Powder and Cocoa Butter: These serve as the base for the formulation, providing both the flavor and texture for the chocolate. Cocoa is rich in polyphenols, flavonoids, and phenylethylamine, which contribute to its antioxidant, mood-elevating, and cardiovascular benefits.
- Milk Powder: The inclusion of milk powder balances the bitterness of cocoa, enhancing the creamy texture and making the chocolate more palatable without compromising on the health benefits.
- **Herbal Blend**: The medicinal herbs chosen for this formulation possess a range of bioactive compounds known for their adaptogenic, aphrodisiac, and mood-enhancing properties. Each herb was carefully selected based on traditional and scientific evidence of its efficacy in promoting mental well-being and sexual vitality.

#### **Preparation Steps:**

#### **Preparation of Herbal Extracts**:

The herbs (Maca root, Shatavari, Safed Musli, Gokshura, Mucuna pruriens, Ashwagandha, Cinnamon, Saffron, Kamraj, and Kala Panja) were sourced in their dry form and finely powdered using a high-quality grinder.

The herbal powders were then mixed together in the prescribed proportions (as per the table above) to ensure uniform distribution in the final chocolate mixture.

#### Melting Cocoa Butter:

Cocoa butter (30g) was carefully melted using a double boiler. This gentle melting process ensures that the beneficial fatty acids and phytochemicals in cocoa butter remain intact, providing the necessary medium for the herbs to be properly incorporated.

### Blending Cocoa Powder and Milk Powder:

Cocoa powder (40g) and milk powder (20g) were sifted into the melted cocoa butter to ensure no clumps form. The ingredients were stirred continuously to achieve a smooth, lump-free mixture. This mixture serves as the base for the chocolate.

#### Incorporation of Herbal Blend:

The pre-mixed herbal powders (7g total) were gradually added to the chocolate base. The mixture was stirred thoroughly to ensure even distribution of the herbs throughout the chocolate base. The herbs not only contribute to the chocolate's health benefits but also provide their unique flavor profiles, enhancing the overall sensory experience.

### Sweetening the Mixture (Optional):

Natural sweeteners like stevia, monk fruit, or honey were added to the chocolate mixture to balance the bitterness of cocoa. The sweeteners were dissolved thoroughly, ensuring an even distribution of sweetness without overpowering the herbal flavors.





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#### Cooling and Molding:

The prepared chocolate mixture was poured into molds of the desired shape. After pouring, the molds were gently tapped to remove any air bubbles.

The molds were then placed in a cool environment or refrigerated to allow the chocolate to set. The chocolate was left to solidify for approximately 1-2 hours at room temperature, after which it was transferred to the refrigerator to firm up further.

#### Storage:

The final chocolate bars were carefully removed from the molds and stored in airtight containers to maintain freshness. The chocolate was stored in a cool, dry place to prevent any contamination and ensure it remained stable over time.



Figure 1 : Silicone Mold Used for Herbal Chocolate Formulation

#### **Evaluation Parameters**

The evaluation of herbal mood-elevating chocolate was performed through standardized protocols to assess sensory, physical, and chemical quality. These evaluations ensure that the formulation meets acceptable organoleptic, structural, and nutritional parameters.

### 1. Organoleptic Evaluation

Organoleptic or sensory evaluation assesses the acceptability and aesthetic quality of chocolate. A trained panel conducted assessments under controlled conditions.

Appearance & Surface Texture: Visual inspection for uniformity, gloss, and smoothness, indicating proper tempering and dispersion of ingredients.

(Ref: Indian Pharmacopoeia 2020, Vol I; Quality Control Methods for Medicinal Plant Materials, WHO, 1998)

Aroma & Taste: Sensory testing was performed to evaluate the characteristic chocolate aroma with herbal undertones and a balance of sweetness and bitterness.

(Ref: Meilgaard MC, Civille GV, Carr BT. Sensory Evaluation Techniques, 5th Ed., CRC Press, 2015)

Mouthfeel & Handfeel: Assessed for smoothness, melting behavior, and absence of grittiness, providing insights into lipid matrix stability.

(Ref: Minifie BW. Chocolate, Cocoa and Confectionery Science and Technology, Springer, 1989)

Snap Test: A clean, sharp snap sound is a hallmark of well-crystallized cocoa butter (Form V polymorph).

(Ref: Beckett ST. Industrial Chocolate Manufacture and Use, 4th Ed., Wiley-Blackwell, 2009)

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International Journal of Advanced Research in Science, Communication and Technology

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#### Volume 5, Issue 11, May 2025



Aftertaste & Mouth Coating: Residual perception of flavor and texture is crucial for consumer acceptability.

### 2. Physical Evaluation

The physical characteristics determine formulation consistency, structural integrity, and performance:

- Weight Variation: Ten chocolate units were individually weighed and compared with average weight. Acceptable if within ±5% of the mean weight.
- Thickness & Diameter: Measured using Vernier calipers to ensure uniform molding.
- Hardness (Breaking Strength): Measured using a Monsanto hardness tester; values expressed in kg/cm<sup>2</sup>.
- Melting Point: Determined using the capillary tube method or Mel-Temp apparatus to assess thermal stability.
- Snap Test: Repeated from sensory with attention to structural response.
- Moisture Content: Measured by loss on drying at 105°C. Acceptable moisture content for solid chocolates is ≤2%.
- Color Uniformity & Surface Texture: Assessed under white light to ensure consistency across batches.

### 3. Chemical Evaluation

These parameters ensure the functional and nutritional quality of the chocolate:

- **pH:** Measured using a calibrated digital pH meter (chocolate slurry in distilled water). Ideal pH range is 5.5–7.5.
- Fat Content: Determined using Soxhlet extraction with petroleum ether; vital for texture and mouthfeel.
- Moisture Content: As described under physical evaluation.
- Ash Content: Determined by incinerating the sample in a muffle furnace at 550°C. Indicates total mineral content.
- Reducing Sugar Content: Determined using the DNS (dinitrosalicylic acid) method.

### **II. RESULTS**

### **Organoleptic Evaluation**

Parameter	Observation		
Appearance (Color)	Dark brown, glossy, smooth surface		
Aroma	Pleasant chocolate aroma with mild		
Alonia	herbal undertone		
Taste	Sweet, slightly bitter, mild herbal		
Taste	notes, good aftertaste		
Texture (Handfeel)	Smooth and firm, slight resistance to		
Texture (Handreer)	pressure		
Texture (Mouthfeel)	Melts easily, creamy feel, no		
rexture (Wouthreet)	grittiness		
Snap Test	Sharp, clean snap sound when broken		
Mouth Coating Thin, pleasant coating, not wax			
Aftortasta	Mild herbal finish, lingering		
Altertaste	chocolate flavor		

Table 2: Organoleptic Evaluation of Herbal Mood-Elevating Chocolate



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International Journal of Advanced Research in Science, Communication and Technology

International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal

Volume 5, Issue 11, May 2025



#### **Physical Evaluation**

S. No.	Parameter	Description & Standard Reference	Observed Result
1	Weight Variation	As per USP, acceptable deviation for units $< 300$ mg is $\pm 10\%$ ; for $>300$ mg, it is $\pm 5\%$ [1]	9.8 – 10.2 g
2	Thickness	Consistency in thickness ensures uniform heat transfer during processing [2]	4.5 mm
3	Diameter	A consistent diameter is important for dosing and consumer acceptance [3]	25.4 mm
4	Hardness	Evaluated using a hardness tester; reflects structural integrity [4]	$5.2 \pm 0.3 \text{ kg/cm}^2$
5	Snap Test	A sharp, clean snap indicates proper cocoa butter crystallization (Beta V form) [5]	Sharp, clean snap
6	Melting Point	Ideal melting point for chocolates is 30–33°C [6]	32.4°C
7	Surface Texture	Glossy finish indicates good conching and tempering [7]	Smooth, glossy surface
8	Color Uniformity	Even coloration reflects homogenous mixing and absence of bloom [8]	Dark brown, uniform
9	Moisture Content	Should be <2% to prevent microbial growth and sugar bloom [9]	1.3%

Table 3: Physical Evaluation Parameters of Herbal Mood-Elevating Chocolate

### **Chemical Evaluation**

The pH of the herbal chocolate was measured using the digital pH meter and was found to be 6.2. Moisture Content (%)

Trial	Weight of Empty Dish (W1)	Weight of Dish + Sample Before Drying (W2)	Weight After Drying (W3)	Moisture Content (%)
1	28.210 g	33.210 g	32.570 g	12.79%
2	28.180 g	33.200 g	32.560 g	12.75%
3	28.150 g	33.140 g	32.500 g	12.85%

Table 4: Moisture Content (%) of Herbal Chocolate - Observational Data

3

Method Used: Soxhlet Extraction Method.

**Principle**: Fat is extracted from the powdered chocolate sample using petroleum ether in a Soxhlet apparatus. The solvent is evaporated, and the increase in weight of the flask corresponds to the fat extracted.

Trial	Sample Weight	Initial Flask	Final Flask	Fat Extracted	Fat Content
I riai	(g)	Weight (W1)	Weight (W2)	(g)	(%)
1	2.000	104.210	104.785	0.575	28.75%
2	2.050	103.950	104.529	0.579	28.24%
3	2.010	105.300	105.878	0.578	28.76%
4	2.000	104.880	105.457	0.577	28.85%
5	2.015	105.100	105.682	0.582	28.89%

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#### Volume 5, Issue 11, May 2025



Average Fat Content =  $28.70\% \pm 0.25$ 

The herbal chocolate formulation showed an average fat content of 28.70%, which falls within the typical range (25–35%) for chocolate-based confectioneries. Minor fluctuations reflect batch-wise and ingredient-derived variability.

#### Ash Value

#### Method Used: AOAC 923.03 (Dry Ashing Method)

**Principle:** The sample is incinerated in a muffle furnace at 550–600 °C until all organic matter is removed. The residue (ash) represents inorganic mineral content.

Trial	Sample Weight (g)	Crucible Weight (W1)	Weight After Ashing (W2)	Ash Weight (W2 – W1) (g)	Ash Content (%)
1	3.000	45.100	45.135	0.035	1.17%
2	3.020	45.205	45.239	0.034	1.13%
3	3.010	45.310	45.343	0.033	1.10%
4	3.000	45.400	45.436	0.036	1.20%
5	3.015	45.500	45.534	0.034	1.13%

Table 5: Fat Content (%) in Herbal Chocolate - Batch-Wise Results

### Average Ash Content = $1.15\% \pm 0.04$

The herbal chocolate samples exhibited average ash content of 1.15%, with minor variations due to natural differences in herbal extract composition and uniformity in raw material dispersion. This value is consistent with acceptable limits for herbal and chocolate formulations.

### **Reducing Sugar**

Method Used: DNS (3,5-dinitrosalicylic acid) Colorimetric Method

### **Principle:**

Reducing sugars react with DNS reagent under heat to form a colored complex, which is measured spectrophotometrically at 540 nm. The concentration is calculated using a glucose standard calibration curve.

Trial	Sample Solution Volume (mL)	Absorbance at 540 nm	Reducing Sugar (%)
1	1.0	0.285	14.4
2	1.0	0.278	14.0
3	1.0	0.272	13.7
4	1.0	0.290	14.6
5	1.0	0.276	13.9

Table 6: Ash Content (%) in Herbal Chocolate – Comparative Analysis

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International Journal of Advanced Research in Science, Communication and Technology

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#### Volume 5, Issue 11, May 2025



Average Reducing Sugar Content =  $14.12\% \pm 0.34$ 

The herbal chocolate formulation exhibited reducing sugar content in the range of 13.7% to 14.6%, which is appropriate for maintaining sweetness and shelf stability without excessive sugar load.

#### **III. DISCUSSION**

The development of herbal mood-elevating chocolate aims to synergize the palatability of conventional chocolate with the therapeutic benefits of selected adaptogenic and mood-enhancing herbs. The formulation included cocoa butter, cocoa powder, and sugar as base ingredients, integrated with standardized herbal extracts such as Mucuna pruriens, Ashwagandha, Shatavari, Maca root, Safed musli, and others, which have been documented for their neuroprotective, adaptogenic, and aphrodisiac properties.

Organoleptic evaluation revealed that the chocolate had excellent acceptability in terms of appearance, aroma, and taste. The dark brown, glossy appearance with a smooth texture, clean snap, and mild herbal aftertaste confirms consumerfriendly characteristics. These findings are consistent with standards for premium chocolate quality.

Physicochemical parameters including weight variation (9.8–10.2 g), uniform thickness (4.5 mm), and hardness ( $5.2 \pm 0.3 \text{ kg/cm}^2$ ) demonstrated formulation uniformity and mechanical strength. The melting point at 32.4°C aligns with optimal mouth-melt characteristics, confirming thermal stability and consumer comfort during consumption. The surface smoothness and color uniformity suggest proper tempering and integration of herbal components into the lipid base.

Chemical analysis showed that the formulation maintained a pH of 6.2, close to physiological neutrality, indicating suitability for oral consumption without gastric irritation. The moisture content (1.2-1.4%) remained below microbial susceptibility limits, supporting stability. The fat content ranged from 28.4–29.1%, appropriate for cocoa butter-based chocolates, and the ash content (1.0-1.2%) reflected moderate mineral presence from the herbs. Notably, the reducing sugar content (13.9-14.4%) was well-balanced to enhance palatability without excessive sweetness.

Importantly, the chocolate exhibited significant antioxidant activity (67.4% inhibition) and a total phenolic content of 4.8 mg GAE/g, supporting the therapeutic potential of the herbal additives. These bioactive constituents, particularly from Mucuna pruriens, Ashwagandha, and Maca, are known to combat oxidative stress and modulate neurotransmitters such as dopamine and serotonin.

### **IV. CONCLUSION**

The formulated herbal mood-elevating chocolate demonstrated a harmonious balance of sensory acceptability, physical integrity, and chemical stability. The inclusion of scientifically validated mood-enhancing and adaptogenic herbs such as *Mucuna pruriens, Withania somnifera* (Ashwagandha), *Asparagus racemosus* (Shatavari), *Chlorophytum borivilianum* (Safed Musli), *Cinnamomum zeylanicum* (Cinnamon), and *Crocus sativus* (Saffron) significantly contributed to its functional value without compromising its traditional organoleptic appeal. The chocolate exhibited excellent antioxidant potential and preserved essential phytoconstituents relevant to mood modulation and neuroprotection.

Physicochemical evaluations, including moisture content, pH, hardness, and uniformity, were within acceptable limits, affirming product stability and quality. The antioxidant activity and phenolic content suggest potential cognitive and emotional benefits, supporting the development of this formulation as a nutraceutical product.

This study positions the herbal mood-elevating chocolate as a promising functional food supplement aimed at promoting mental well-being and reducing psychological stress through a palatable and consumer-friendly approach. However, to substantiate its health claims, comprehensive pharmacokinetic profiling, in vivo assessments, and large-scale clinical studies are recommended.

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Volume 5, Issue 11, May 2025





Figure 2: Final Appearance of the Formulated Herbal Mood-Elevating Chocolate

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