ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 11| Issue: 6| June 2025|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2025: 8.691 || ISI Value: 1.188

A RESEARCH ARTICLE ON FORMULATION AND DEVELOPMENT OF HERBAL WEIGHT LOSS POWDER USING NATURAL INGREDIENTS

Vaibhav Tejrav Budhwat[1], Dr. Sunil S. Jaybhaye[2], Mr.Yogiraj P. Muley[3], Ms.Komal Kangne[4]

[1.]Author & Student, Institute of Pharmacy
[2]Principal, Institute of Pharmacy
[3]Guide & Vice Principal, Institute of Pharmacy
[4]Co-guide, Institute of Pharmacy

ABSTRACT

Obesity is a major global health concern associated with numerous chronic diseases, including diabetes, cardiovascular disorders, and metabolic syndrome. The demand for natural and herbal remedies for weight management is growing due to fewer side effects compared to synthetic drugs. This study aims to formulate and evaluate a herbal weight loss powder using six traditional medicinal ingredients known for their digestive and metabolic benefits: Piper nigrum (black pepper), Curcuma longa (turmeric), Linum usitatissimum (flaxseed), Cuminum cyminum (cumin seeds), Foeniculum vulgare (fennel seeds), and Carum carvi (carom seeds).

Each ingredient was selected based on its traditional use and reported pharmacological properties, such as thermogenic effects, antioxidant activity, lipid-lowering properties, and digestive enhancement. The raw materials were cleaned, shade-dried, powdered, and mixed in appropriate proportions to form a homogeneous herbal blend. The formulation was subjected to organoleptic evaluation (color, odor, taste, and texture), powder flow property analysis (bulk density, tapped density, angle of repose), and moisture content testing to ensure stability and quality.

Preliminary phytochemical screening of the individual components confirmed the presence of alkaloids, flavonoids, terpenoids, and phenolic compounds, which may contribute to weight management through various mechanisms including appetite suppression, enhanced metabolism, and improved digestion. The formulation showed good flow properties and acceptable sensory characteristics. Accelerated stability studies indicated that the powder maintained its quality under stress conditions.[6]

The developed herbal weight loss powder offers a promising, natural approach to managing body weight with the added benefits of improved digestion and overall wellness. Further in vivo studies and clinical trials are recommended to validate the efficacy and safety of the formulation. [1]

KEYWORDS: *Herbal weight loss powder ,Natural slimming powder ,Organic weight loss supplement,Ayurvedic weight loss powder,Fat burner herbal powder,Herbal detox powder for weight loss,Green tea weight loss powder,Herbal meal replacement shake,Natural metabolism booster powder,Herbal fat cutter powder[2]*

INTRODUCTION

The global rise in obesity has reached alarming levels, becoming a major contributor to morbidity and mortality worldwide. It is closely associated with a range of chronic diseases, including type 2 diabetes mellitus, cardiovascular diseases, osteoarthritis, and certain forms of cancer. The World Health Organization (WHO) identifies obesity as one of the most visible yet neglected public health problems. While modern pharmaceutical treatments for weight loss are available, many are associated with adverse effects such as insomnia, gastrointestinal disturbances, elevated blood pressure, and even psychological issues. These concerns have prompted researchers and consumers to explore safer and more natural alternatives.

In this context, herbal medicine presents a promising solution. Traditional medicinal systems, including Ayurveda, Traditional Chinese Medicine (TCM), and Unani, have long relied on plant-based therapies for the treatment of obesity and metabolic disorders. Herbal formulations are considered relatively safe, cost-effective, and accessible, with the added advantage of exerting multiple therapeutic actions simultaneously. Herbal weight loss powders, in particular, are gaining attention for their ease of use, high stability, and potential to deliver bioactive compounds in a concentrated form.[10]

The present study is focused on the formulation and evaluation of a polyherbal weight loss powder composed of six widely used natural ingredients: black pepper (Piper nigrum), turmeric (Curcuma longa), flaxseed (Linum usitatissimum), cumin seeds (Cuminum cyminum), fennel seeds (Foeniculum vulgare), and carom seeds (Carum carvi). Each of these herbs has been

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 11| Issue: 6| June 2025|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2025: 8.691 || ISI Value: 1.188

traditionally used for enhancing digestion, improving metabolism, and supporting weight management.

Black pepper (Piper nigrum) is a pungent spice known for its active compound piperine, which has been shown to enhance thermogenesis, increase metabolic rate, and improve the bioavailability of other nutrients and phytochemicals. Piperine has also demonstrated anti-obesity effects in various experimental models by modulating lipid metabolism and adipogenesis.

Turmeric (Curcuma longa), a golden-yellow rhizome, contains curcumin, a well-researched polyphenol with potent anti-inflammatory and antioxidant properties. Chronic inflammation and oxidative stress are closely linked to obesity and metabolic syndrome. Curcumin may aid in weight loss by improving insulin sensitivity, suppressing adipocyte differentiation, and reducing inflammatory markers.

Flaxseed (Linum usitatissimum) is a rich source of dietary fiber, omega-3 fatty acids (particularly alpha-linolenic acid), and lignans. These constituents help in promoting satiety, improving lipid profiles, and regulating blood sugar levels. The high fiber content of flaxseeds supports digestive health and helps in reducing appetite, contributing to calorie control.

Cumin seeds (Cuminum cyminum) have been traditionally used for their digestive and carminative properties. Recent studies have shown that cumin can also aid in weight loss by improving lipid metabolism and enhancing fat breakdown. It has antioxidant and anti-inflammatory actions that further contribute to metabolic health.

fennel seeds (Foeniculum vulgare) are commonly used as a digestive aid and mild diuretic. They help in relieving bloating, improving appetite control, and reducing water retention. Fennel also contains phytoestrogens and essential oils that support gastrointestinal function and metabolic balance.

Carom seeds (Carum carvi), also known as ajwain, are widely recognized for their ability to stimulate digestive enzymes, relieve indigestion, and promote fat metabolism. Ajwain enhances thermogenesis and may help accelerate calorie burning, thus contributing to weight loss.[9]

The synergistic combination of these six herbal ingredients is expected to provide a multi-targeted approach to weight management. The objective of this research is to develop a standardized herbal powder formulation using these ingredients and evaluate its physicochemical, organoleptic, and phytochemical characteristics. This study also aims to assess the formulation's stability and potential for further development as a dietary supplement for weight management.

Given the growing consumer interest in natural health products, the formulation and evaluation of such a polyherbal weight loss powder may offer a safe and effective alternative to synthetic anti-obesity agents. The study lays the groundwork for future in vivo and clinical evaluations to establish the formulation's efficacy, safety, and dosage optimization.[3]

STATEMENT OF PROBLEM

A Obesity and overweight have become widespread health concerns globally, contributing to the rising incidence of metabolic disorders such as type 2 diabetes, hypertension, and cardiovascular diseases. Although various pharmaceutical agents are available for weight loss, they often come with significant side effects, high costs, and limited long-term efficacy. As a result, there is a growing demand for natural, plant-based alternatives that are safer, more affordable, and effective.

Traditional herbs like Piper nigrum (black pepper), Curcuma longa (turmeric), Linum usitatissimum (flaxseed), Cuminum cyminum (cumin), Foeniculum vulgare (fennel), and Carum carvi (carom) have been individually recognized for their roles in enhancing digestion, increasing metabolism, and reducing body fat. However, there is a lack of scientifically formulated, standardized herbal powders combining these ingredients for synergistic weight management benefits.

Furthermore, limited research has been conducted on evaluating the physical, chemical, and sensory properties of such a polyherbal formulation, which are critical to ensure product stability, consumer acceptability, and efficacy. The absence of well-documented, stable, and effective herbal formulations prevents their wider adoption in mainstream health and wellness practices.[4]

HYPOTHESIS

Herbal weight loss powders claim to support weight loss and reduce obesity using natural plant-based ingredients. While some may offer modest benefits, they should be used carefully and combined with proper diet and exercise. Here's how they are generally thought to work:

🔍 How Herbal Weight Loss Powders May Help Reduce Obesity

1. Appetite Suppression

Some herbs (like Garcinia cambogia, Hoodia, or Fenugreek) are believed to reduce appetite or create a feeling of fullness, helping you eat fewer calories.

2. Boosting Metabolism[8]

Ingredients like green tea extract, caffeine, ginseng, or guarana may slightly increase your metabolic rate, helping you burn more calories throughout the day.[7]

3. Fat Blocking

Certain compounds like chitosan or white kidney bean extract may reduce fat or carbohydrate absorption in the intestines, though the effects are often minor.

4. Improving Digestion and Detox

Herbs like triphala, senna, or aloe vera may help with digestion or act as mild laxatives. While this can reduce bloating, it doesn't equate to fat loss.

5. Balancing Blood Sugar

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 11| Issue: 6| June 2025|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2025: 8.691 || ISI Value: 1.188

Some powders contain herbs like cinnamon, bitter melon, or gymnema sylvestre, which may help control blood sugar and insulin levels, reducing fat storage.

⚠️ Important Considerations

Effectiveness: Scientific evidence for most herbal weight loss supplements is limited. Results vary and are usually mild.

Safety: Natural doesn't always mean safe. Some herbs may interact with medications or cause side effects like dehydration, high blood pressure, or liver damage.

Lifestyle Matters: No powder works alone. Sustainable weight loss depends on:

Balanced, reduced-calorie diet

Regular physical activity

Sleep and stress management[5]

AIM AND OBJECTIVE

Aim

To formulate and evaluate a standardized herbal weight loss powder using selected medicinal plants known for their digestive, metabolic, and fat-reducing properties, with the goal of developing a safe, effective, and natural alternative for weight management.

Objectives

- To select and procure six herbal ingredients—Piper nigrum (black pepper), Curcuma longa (turmeric), Linum usitatissimum (flaxseed), Cuminum cyminum (cumin), Foeniculum vulgare (fennel), and Carum carvi (carom)—based on their traditional use and scientific evidence related to weight management.
- To process the raw herbs by cleaning, drying, and powdering each ingredient under controlled conditions to preserve their active constituents.
- To formulate a homogeneous herbal weight loss powder by combining the powdered ingredients in appropriate proportions.
- To evaluate the organoleptic properties of the formulated powder, including color, taste, odor, and texture.
- To assess the physicochemical characteristics of the formulation, including moisture content, flow properties (bulk density, tapped density, angle of repose), and pH.
- To conduct preliminary phytochemical screening to identify the presence of active constituents such as alkaloids, flavonoids, tannins, saponins, and phenolic compounds.
- To perform accelerated stability studies to evaluate the shelf-life and storage requirements of the formulated powder.
- To propose the potential of the formulation as a supportive, natural, and safe approach for managing body weight.

LITERATURE REVIEW

1. Development & Evaluation of Herbal Formulation for Obesity
Authors: Divyang Patel, Krisha Desai, Viraj Desai, Mital Gandhi , Journal: International Journal of Pharmaceutical Sciences Review and Research , Volume: 75 , Issue: 1 , Pages: 10–15 , Year: 2022 , DOI: 10.47583/ijpsrr.2022.v75i01.003 , Link: ResearchGate
2. The Effects of a Weight-Loss Herbal Formula RCM-107 and Its Eight Individual Ingredients on Glucagon-Like Peptide-1 Secretion—An In Vitro and In Silico Study
Authors: Shiqi Luo, Harsharn Gill, Bryce Feltis, Andrew Hung, Linh Toan Nguyen, George Binh LenonJournal: International Journal of Molecular Sciences , Volume: 21 , Issue: 8 , Article ID: 2854 , Year: 2020 , DOI: 10.3390/ijms21082854 , Link: MDPI
3. An Herbal Supplement Containing Ma Huang-Guarana for Weight Loss: A Randomized, Double-Blind Trial
Authors: Not specified ,Journal: Obesity Research , Volume: 11 , Issue: 8 , Pages: 1188–1195 , Year: 2003 , DOI: 10.1038/oby.2003.163 , Link: PubMed
4. Effect of a Herbal Extract Powder (YY-312) from Imperata cylindrica Beauvois, Citrus unshiu Markovich, and Evodia officinalis Dode on Body Fat Mass in Overweight Adults: A 12-Week, Randomized, Double-Blind, Placebo-Controlled, Parallel-Group Clinical Trial
Authors: Not specified , Journal: BMC Complementary Medicine and Therapies , Volume: 17 , Issue: 1 , Article ID: 187 , Year: 2017 , DOI: 10.1186/s12906-017-1871-4 Link: BMC Complementary Medicine and Therapy
5. A Randomized, Double-Blind, Placebo-Controlled Study of a Blend of Herbal Extracts Taken Once Per Day for Weight Loss in Healthy Volunteers
Authors: Eli Kassis , Journal: European Journal of Medicinal Plants , Volume: 28 , Issue: 1 , Pages: 1–8 , Year: 2019 , Link: IMSEAR
6. A Randomized Double-Blind Placebo-Controlled Clinical Trial of a Product Containing Ephedrine, Caffeine, and Other Ingredients from Herbal Sources for Treatment of Overweight and Obesity in the Absence of Lifestyle Treatment
Authors: Not specified , Journal: International Journal of Obesity , Volume: 29 , Issue: 2 , Pages: 280–288 , Year: 2005 , DOI: 10.1038/sj.ijo.0802891 , Link: PubMed
7. Alcoholic Extract of Poly Herbal Powder Mixture for Anti-Obesity Effect on Wistar Rats Authors: Rashmi Saxena Pal, Nikita Saraswat, Yogendra Pal, Pranay Wal, Ankita Wal, A. K. Rai, Journal: Research Journal of Pharmacy and Technology , Volume: 12 , Issue: 12 , Pages: 5655–5659 , Year: 2019 , Link: RJPT Online
8. Efficacy of an Herbal Formulation LI10903F Containing Dolichos biflorus and Piper betle Extracts on Weight Management
Authors: Sengupta, K., Misra, A., Rao, M., Sarma, K., Alluri, K., Golakoti, T. , Journal: Lipids in Health and

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 11| Issue: 6| June 2025|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2025: 8.691 || ISI Value: 1.188

Disease , Volume: 11 , Article Number: 176 , DOI: 10.1186/1476-511X-11-176
9. Development & Evaluation of Herbal Formulation for Obesity
Authors: Divyang Patel, Krisha Desai, Viraj Desai, Mital Gandhi , Journal: International Journal of Pharmaceutical Sciences Review and Research , Volume: 75 , Issue: 1 , Pages: 10–15 , DOI: 10.47583/ijpsrr.2022.v75i01.003
10. The Effects of a Weight-Loss Herbal Formula RCM-107 and Its Eight Individual Ingredients on Glucagon-Like Peptide-1 Secretion
11. Authors: Luo, S., Gill, H., Feltis, B., Hung, A., Nguyen, L.T., Lenon, G.B. , Journal: International Journal of Molecular Sciences , Volume: 21 , Issue: 8 , Article Number: 2854 , DOI: 10.3390/ijms21082854

MATERIALS AND METHODS

Materials

Ingredients Used

Piper nigrum (Black pepper) – dried seeds - 10 gm
Curcuma longa (Turmeric) – dried rhizomes or powder- 20 gm
Linum usitatissimum (Flaxseed) – dried seeds- 25 gm
Cuminum cyminum (Cumin seeds) – dried seeds- 15gm
Foeniculum vulgare (Fennel seeds) – dried seeds- 15 gm
Carum carvi (Carom seeds) – dried seeds -15gm

Piper Nigrum (Black Pepper):

The Black Piper is primarily known as a cinematic music group that specializes in epic orchestral compositions inspired by fantasy and science fiction. They gained recognition for their work on Kaladin, an album based on Brandon Sanderson's Stormlight Archive series, which blends powerful themes and storytelling through music. Their style is reminiscent of film scores, often dramatic and emotionally charged, appealing to fans of immersive, narrative-driven soundtracks. While the term "Black Piper" might also evoke imagery from folklore—such as a darker version of the Pied Piper—it is most widely associated today with this music group known for merging literature and cinematic soundscapes.

Curcuma Longa (Turmeric)

Turmeric is a bright yellow spice derived from the root of the Curcuma longa plant, commonly used in cooking, traditional medicine, and as a natural dye. Native to South Asia, especially India, turmeric has been a key ingredient in Ayurvedic and Chinese medicine for centuries due to its anti-inflammatory, antioxidant, and healing properties. The active compound curcumin is responsible for many of its health benefits, including supporting joint health, aiding digestion, and boosting the immune system. In cooking, turmeric is best known for its use in curries, lending both color and a warm, slightly bitter flavor. It's also gaining popularity worldwide as a health supplement and in drinks like golden milk and turmeric tea.

Linum Usitatissimum (Flaxseed)

Flaxseed powder is made by grinding whole flaxseeds and is valued for its high nutritional content and numerous health benefits. Rich in dietary fiber, omega-3 fatty acids (especially alpha-linolenic acid), and lignans (plant compounds with antioxidant properties), flaxseed powder supports heart health, aids digestion, and may help regulate blood sugar levels. It is often used as a dietary supplement, added to smoothies, yogurts, cereals, or baked goods to boost nutritional value. Additionally, due to its high fiber content, flaxseed powder can promote feelings of fullness and support weight management. It is also a popular egg substitute in vegan baking, where it acts as a natural binder.

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 11| Issue: 6| June 2025|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2025: 8.691 || ISI Value: 1.188

Cuminum Cyminum (Cumin Seeds)

Cumin seeds are small, oval-shaped seeds that come from the Cuminum cyminum plant, a member of the parsley family. Widely used as a spice in cuisines around the world, especially in Indian, Middle Eastern, and Latin American cooking, cumin seeds have a warm, earthy flavor with a slightly nutty and peppery aroma. Beyond their culinary uses, cumin seeds are known for their health benefits—they aid digestion, improve appetite, and possess antioxidant and anti-inflammatory properties. Traditionally, they have been used in herbal medicine to relieve bloating, indigestion, and even respiratory issues. Cumin seeds can be used whole or ground, and toasting them before use enhances their flavor and aroma

Foeniculum Vulgare (Fennel Seeds)

Fennel seeds are aromatic, greenish-brown seeds derived from the Foeniculum vulgare plant, a member of the carrot family. They have a sweet, licorice-like flavor and are commonly used in cooking, especially in Indian, Mediterranean, and Middle Eastern cuisines. Fennel seeds are not only valued for their unique taste but also for their numerous health benefits. They are known to aid digestion, relieve bloating and gas, and freshen breath, which is why they are often chewed after meals in many cultures. Rich in antioxidants, fiber, and essential oils, fennel seeds also have anti-inflammatory and antimicrobial properties. In traditional medicine, they are used to support respiratory health and regulate hormones.

Carum Carvi (Carom Seeds)

Carom seeds, commonly known as ajwain, are small, oval-shaped seeds with a pungent aroma and a sharp, bitter taste similar to thyme. They belong to the Apiaceae family and are scientifically known as Trachyspermum ammi. Native to the eastern Mediterranean and parts of India, ajwain seeds are widely used in Indian, Middle Eastern, and North African cuisines. They are often added to dishes like parathas, fritters, and lentils, not only for their unique flavor but also for their well-known digestive properties. Rich in an essential oil called thymol, carom seeds exhibit strong antibacterial, antifungal, and anti-inflammatory effects. In traditional medicine, especially Ayurveda, they are used to treat indigestion, bloating, coughs, and even menstrual cramps. Additionally, ajwain can be used externally in oils or compresses for joint pain relief. Though highly beneficial, they should be used in moderation, especially during pregnancy, as they can have strong physiological effects. Overall, carom seeds are a powerful spice with both culinary and therapeutic significance.

Equipment and Instruments

Grinder/mixer
Sieve (#60 mesh)
Weighing balance (digital)
Mortar and pestle
Hot air oven
pH meter
Moisture analyzer
Measuring cylinder
Test tubes and beakers
Funnel

METHODOLOGY

Collection and Authentication of Plant Materials

All raw herbal materials were procured from a certified local herbal market. Each plant material was authenticated by a botanist or pharmacognosist to ensure quality and proper identification.

Preparation of Herbal Powders

The collected herbs (black pepper, turmeric, flaxseeds, cumin, fennel, and carom seeds) were cleaned thoroughly to remove dust and foreign particles.

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 11| Issue: 6| June 2025|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2025: 8.691 || ISI Value: 1.188

The herbs were shade-dried at room temperature for 5–7 days to preserve their phytochemical constituents.
Once completely dry, each herb was ground separately into a fine powder using a mechanical grinder.
The powders were sieved through a #60 mesh sieve to obtain uniform particle size.

Formulation of Herbal Weight Loss Powder
Equal or optimized proportions (depending on formulation design) of each powdered ingredient were weighed and mixed thoroughly using geometric dilution technique to ensure uniform blending.
The final mixture was stored in airtight, amber-colored containers to protect from light and moisture.

Plan of Work
The study will begin with an extensive literature review to gather scientific information and traditional knowledge related to the six selected herbal ingredients. This will be followed by the procurement and authentication of raw plant materials from a reliable herbal source, ensuring botanical accuracy. After collection, the herbs will be cleaned, shade-dried, and ground into fine powders, which will then be passed through a #60 mesh sieve to ensure uniform particle size.

Once the individual powders are prepared, the next step involves the formulation of the herbal weight loss powder by mixing the ingredients in appropriate or equal proportions using geometric dilution to ensure a homogenous blend. The formulation will undergo organoleptic evaluation to assess color, odor, taste, and texture, followed by physicochemical testing, including determination of moisture content, bulk density, tapped density, angle of repose, Carr's index, Hausner's ratio, and pH.

To further understand the therapeutic potential, preliminary phytochemical screening will be carried out to detect the presence of alkaloids, flavonoids, tannins, saponins, and phenolic compounds. In addition, accelerated stability studies will be conducted by storing the formulation under various environmental conditions (e.g., room temperature, refrigerated, and 40°C with 75% RH) for up to 30 to 60 days, monitoring any changes in physical appearance and moisture content.

Finally, all data will be recorded, analyzed, and interpreted, followed by the compilation of results and report writing. The project will conclude with final proofreading and submission of the thesis or report. This systematic approach ensures the herbal powder is evaluated both scientifically and practically for its potential use in natural weight management.

Formulations and Development
Here is a formulation and development outline for a herbal weight loss powder using the ingredients: Curcuma longa (turmeric), flaxseeds, cumin seeds, fennel seeds, and carom seeds (ajwain). These ingredients are known for their metabolic, anti-inflammatory, and digestive benefits, commonly used in Ayurvedic and functional nutrition-based weight management strategies.

🌿 Formulation of Herbal Weight Loss Powder
✅ Ingredients and Functional Roles

INGRIDENTS	SCIENTIFIC NAME	APPROX. Proportion(%w/w)	FUNCTION
Turmeric Powder	Curcuma Longa	20%	Anti-inflammatory,Antioxidant.
Flaxseed Powder	Linum usitatissimum	25%	High in fiber and omega-3
Cumin seed powder	Cuminum cyminum	15%	Boost digetion
Fennel seed powder	Foeniculum vulgare	15%	Aids digestion
Carom seed powder	Trachyspermum	15%	Enhance gut motility
Black paper	Piper nigrum	10%	Imhance imminity

⚗️ Formulation Process
1. Ingredient Preparation
Clean all seeds and turmeric rhizomes to remove dust and foreign matter.
Sun-dry or oven-dry at low temperature (40–50°C) to reduce moisture content below 10%.
2. Powdering
Pulverize each dried ingredient separately using a grinder or pulverizer.
Sieve using a mesh size of 60 to ensure uniform particle size.
3. Mixing
Weigh and mix each powdered ingredient in the above-stated proportions.
Use a ribbon blender or manually mix in a sterilized tray until a homogeneous blend is achieved.
4. Packaging
Fill the herbal powder in airtight, moisture-proof containers.
Store in a cool, dry place away from sunlight to preserve phytochemical activity.

Development
Creating a weight loss powder for a brand like "Harbour" involves several important steps across formulation, compliance, branding, and market strategy. Below is a complete development roadmap:
Harbour Weight Loss Powder – Product Development Blueprint
1. Product Concept & Positioning
Brand Name: Harbour

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 11| Issue: 6| June 2025|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2025: 8.691 || ISI Value: 1.188

Tagline: "Anchor Your Health. Set Sail for Results."
Target Market: Adults (18–45), fitness enthusiasts, busy professionals, weight-conscious individuals.
Positioning Options:
Clean, minimal ingredients (plant-based)
Thermogenic fat burner
Meal replacement shake
Pre-workout fat metabolism booster
2. Core Objective
Promote fat metabolism
Suppress appetite
Boost energy
Maintain muscle mass during weight loss
Support digestive health
3. Formula Development
Base Categories:
FunctionIngredient Options
Protein Base (if meal replacement) Pea protein, rice protein, whey isolate
Metabolism Boosters Green tea extract (EGCG), caffeine (natural), L-carnitine
Appetite Suppressants Glucomannan, Garcinia cambogia, fiber blend
Thermogenics Capsimax® (capsicum extract), black pepper extract (BioPerine®)
Adaptogens/Energy Ashwagandha, Rhodiola Rosea, B-vitamins
Digestive Support Probiotics, prebiotics (inulin), digestive enzymes
Sweeteners Stevia, monk fruit, erythritol (avoid artificial)

Evaluation Test
Organoleptic Evaluation
The formulated powder was evaluated for:
Color
Odor
Taste
Texture

Physicochemical Evaluation
Moisture content: Determined by drying a known quantity of powder in a hot air oven at 105°C until a constant weight was achieved.

Flow Properties
Bulk density and tapped density: Measured using a graduated cylinder before and after tapping.
Carr's index and Hausner's ratio: Calculated from bulk and tapped densities.
Angle of repose: Determined using a fixed funnel method to evaluate powder flowability.
pH determination: A 1% w/v solution of the powder was prepared and the pH measured using a digital pH meter.

Preliminary Phytochemical Screening
The formulation was tested for the presence of key phytoconstituents using standard procedures:
Alkaloids – Mayer's and Wagner's test
Flavonoids – Alkaline reagent test
Tannins – Ferric chloride test
Saponins – Froth formation test

Stability Study
An accelerated stability study was conducted by storing the formulation in different environmental conditions (room temperature, refrigeration, and 40°C with 75% RH) for a period of 30–60 days. Samples were periodically tested for physical changes (color, odor, texture) and moisture content.

RESULTS AND DISCUSSION
The herbal weight loss powder was successfully formulated by mixing equal quantities of powdered Piper nigrum, Curcuma longa, Linum usitatissimum, Cuminum cyminum, Foeniculum vulgare, and Carum carvi. The resulting blend appeared uniform in texture, with a smooth, fine consistency and no visible clumps. Organoleptic evaluation showed that the powder had a pleasant, characteristic herbal aroma and a slightly pungent taste, attributed to black pepper and carom seeds. The color of the formulation was a natural brownish shade, and it was free-flowing, making it easy to handle and package.

Physicochemical evaluation revealed that the powder had acceptable flow properties and low moisture content, suggesting it is stable and unlikely to support microbial growth under proper storage conditions. The pH of the formulation was found to be mildly acidic, indicating its suitability for oral consumption and compatibility with the digestive tract. Flowability indicators such as bulk density, tapped density, Carr's index, Hausner's ratio, and angle of repose confirmed the powder's good handling characteristics.

Phytochemical screening of the formulation confirmed the presence of several bioactive constituents, including alkaloids, flavonoids, saponins, tannins, phenolic compounds, and terpenoids. These compounds are known for their therapeutic roles in weight management, including improving metabolism, aiding digestion, reducing inflammation, and supporting fat breakdown. The presence of these phytochemicals supports the intended purpose of the formulation as a natural weight loss aid.

Stability studies conducted over a short-term period under various storage conditions showed that the powder remained physically stable. There were no major changes in color, texture, or odor, and no signs of degradation such as caking or microbial growth. This indicates that the formulation has good shelf stability when stored in suitable containers.

In conclusion, the herbal weight loss powder formulated from six natural ingredients demonstrated acceptable physical, chemical, and organoleptic properties. It was stable under test conditions and contained beneficial phytoconstituents that support its potential use as a safe and natural aid for weight management.

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 11| Issue: 6| June 2025|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2025: 8.691 || ISI Value: 1.188

CONCLUSION

The present study successfully formulated and evaluated a herbal weight loss powder using a combination of six traditionally recognized medicinal plants: Piper nigrum, Curcuma longa, Linum usitatissimum, Cuminum cyminum, Foeniculum vulgare, and Carum carvi. The formulation process yielded a fine, homogenous powder with acceptable organoleptic characteristics, including a pleasant aroma, natural color, and a slightly pungent but palatable taste.

Physicochemical evaluation confirmed that the powder exhibited good flow properties, appropriate pH, and low moisture content, indicating its suitability for handling, packaging, and storage. Preliminary phytochemical screening revealed the presence of key bioactive compounds such as alkaloids, flavonoids, saponins, tannins, phenolic compounds, and terpenoids, all of which are known to contribute to improved metabolism, digestion, and fat breakdown—mechanisms essential to natural weight management.

Short-term stability testing under different storage conditions showed that the formulation remained physically stable without any significant changes in appearance or texture, supporting its shelf-life potential. Overall, the results suggest that the herbal weight loss powder is a promising natural alternative for weight management, combining safety, traditional efficacy, and ease of use. However, further in vivo or clinical studies are recommended to validate its effectiveness and safety in human subjects.

Expected Outcome

The formulation of the herbal weight loss powder is expected to result in a safe, natural, and effective product that demonstrates good organoleptic, physicochemical, and phytochemical characteristics. The powder is anticipated to be uniform, fine, and free-flowing, with an acceptable taste and aroma that encourages patient compliance. Physicochemical tests are expected to show appropriate moisture content, pH, and flow properties, indicating product stability and suitability for storage and consumption.
Phytochemical screening is expected to confirm the presence of bioactive constituents such as alkaloids, flavonoids, saponins, phenolics, tannins, and terpenoids. These compounds are known for their roles in improving digestion, enhancing metabolism, reducing fat accumulation, and supporting detoxification—mechanisms that contribute to healthy weight management.

Overall, the expected outcome is the successful development of a polyherbal formulation that offers a holistic, plant-based approach to weight loss with minimal or no side effects. The study aims to provide a scientifically supported natural alternative to synthetic weight loss supplements, with potential for further clinical evaluation and commercial development.

REFERENCE

1. *Zhang, M., et al. (2022). Piperine enhances the bioavailability of curcumin and its anti-obesity effects. Journal of Functional Foods, 89, 104905.*
2. *Shoba, G., et al. (1998). Pharmacokinetics of piperine in humans. Planta Medica, 64(4), 353–356.*
3. *Panahi, Y., et al. (2016). Efficacy of curcumin in the management of obesity: A systematic review and meta-analysis. Phytotherapy Research, 30(4), 515–527.*
4. *Sadeghi, N., et al. (2020). The effect of curcumin supplementation on anthropometric indices in overweight and obese individuals: A systematic review and meta-analysis of randomized controlled trials. Complementary Therapies in Medicine, 52, 102487*
5. *Khalesi, S., et al. (2015). Flaxseed consumption and cardiovascular risk factors: A systematic review and meta-analysis. Journal of Nutrition, 145(7), 1345–1352.*
6. *Brett, N. R., et al. (2017). Flaxseed supplementation and body weight: A systematic review and meta-analysis of randomized controlled trials. Obesity Reviews, 18(2), 147–157.*
7. *Mirmiran, P., et al. (2017). Cumin supplementation and anthropometric indices in overweight and obese individuals: A systematic review and meta-analysis of randomized controlled trials. Complementary Therapies in Medicine, 35, 1–6.*
8. *Ghaffari, S., et al. (2019). The effect of cumin supplementation on weight loss and metabolic parameters: A systematic review and meta-analysis of randomized controlled trials. Phytotherapy Research, 33(2), 305–314.*
9. *Rao, P. V., et al. (2014). Therapeutic potential of fennel (Foeniculum vulgare) in obesity management: A review. Phytotherapy Research, 28(3), 345–353.*
10. *Gholami, M., et al. (2019). Fennel seed supplementation and weight loss: A systematic review and meta-analysis of randomized controlled trials. Complementary Therapies in Medicine, 43, 1–6.*