

To Develop A Polyherbal Formulation For Antiobesity

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Abstract :-

Obesity is a very common global health problem, and it is known to be linked to cardiovascular and cerebrovascular diseases. Western medical treatments for obesity have many drawbacks, including effects on monoamine neurotransmitters and the potential for drug abuse and dependency. The safety of these medications requires improvement. Herbal medicine has been used for treatment of disease for more than 2000 years, and it has proven efficacy. Many studies have confirmed that herbal medicine is effective in the treatment of obesity, but the mechanisms are not clear. This article will discuss the possible effects and mechanisms of herbal medicine treatments for obesity that have been reported in the past decade.

Obesity, a complex interplay between environmental and genetic factors and is associated with significant morbidity and mortality. Usage of herbs for the management of obesity in the recent times is attracting attention. A web and manual based literature survey was conducted to assess the amount of information available on the herbal products for weight management.

An ideal herbal anti obesity product should reduce the weight by 10% over placebo of treatment by showing an evidence of improvement of bio markers like blood pressure, lipids and glycemia without any side effects.

1.INTRODUCTION

1.1 OBESITY:-

Obesity is considered as a principal public health concern and ranked as the fifth foremost reason for death globally.(1) Medically, obesity is a condition in which excess body fat has accumulated to the extent that it may have an adverse effect on health, leading to reduced life expectancy and/or increased health problems.(2) Overweight and obesity can be considered as a cosmetic problem associated with various other lifestyle disorders, like diabetes, dyslipidaemia, hypertension, cardiovascular diseases, musculoskeletal disorders, cancer, etc.(3)

Wide numbers of isolated phytochemical constituents are identified for pharmacological activities like diuretic, laxative, purgative, hepatoprotective, anti-asthmatic, anti-allergic properties. Traditionally, the plant is used in treatment of diarrhea, dysentery, asthma, cough, dropsy, ulcers, piles, rheumatism, scabies snake bite and other skin diseases.(4) Seeds contain Saponin A and B. Saponin A was identified as D-Glucuronic Acid and saponins B was identified as β -Dgalactopyranosyl ester of D Glucuronic Acid.(5)

Oral route of administration is considered the most suitable route for drug delivery with highest patient's compliance.(6) Effervescent granules mainly contains the medicinal agent in a dry mixture usually composed of sodium bicarbonate, tartaric acid & citric acid.(7) When added to water, the acids and the base react to liberate carbon dioxide, resulting in effervescence.

The resulting carbonated solution normally masks the undesirable taste of the medicinal agent. Since the decoction product is not palatable enough, the addition of an effervescent vehicle to the granule formulation may help to improve the taste and palatability of the solution formed due to its property of rapidly dissolving granules in solution.(8, 9) This product contains sweetener and available in several flavours which is prospective to elevate the rates of patient's compliance in taking the medication, especially for the pregnant women.(10)

Absorption of dietary triglycerides in small intestine involves their hydrolysis into free fatty acids by pancreatic lipase enzyme. On the other side, absorption of carbohydrates in small intestine involves their hydrolysis into simple sugars by amylase enzymes. Inhibition of these enzymes could be beneficial in weight control and weight loss treatments.

Obesity is an epidemic affecting the quality of human life

However, many of these may have unwarranted health-related side effects (15).

Dietary fat is consumed in [triglycerides](#) (TG) form containing fatty acids (FAs) in the 1 and 3 positions of the glycerol [backbone](#). Bovine milk contains approximately 4.2% fat composed of 98% TG (16). Dairy-origin FAs are composed of 4–

16 carbon atoms with [Palmitic acid](#) representing ~30% of total [FAs content](#) . TGs are hydrolyzed into free FAs and glycerol molecules by [pancreatic lipase](#) (PL) enzyme within the [gastrointestinal tract](#) (GIT) (Carrière et al., 2000).

ADVANTAGES :

1. Natural ingredient : Herbal powders are typically formulated with natural ingredients such as herbs, roots, fruits, and spices, which are believed to have immune-boosting properties.
2. Immunity system support : Many herbs and plants used in these powders contain compounds that are thought to support the immune system.
3. Reduce risk of side effect : Since herbal immunity booster powders are made from natural ingredients, they are often perceived as having fewer side effects compared to synthetic supplements or medications.
4. Helps in preventing various viral , bacterial and other diseases.
5. Helps in removing toxins and free radical from body.
6. Helps in overcoming body weakness .
7. Detoxifies and rejuvenate the body.
8. Improve condition like low hemoglobin and low blood pressure .

2.OBJECTIVE :

The objective of the present research work is to provide good health by providing herbal capsules obesity is the problem is concerned with the maximum population in the whole world, these issues are seen in the people of different age group whether it may be children, adult or old age people . obesity is caused by many reasons such as poor nutrition , alcohol , smoking , stress and many other body infection which leads to increase in obesity.

The above explored study for the present context is divided into following objectives:

1. The primary goal is to enhance the cut down on those extra calories that are responsible for gaining weight due to overeating.
2. Herbal capsules offer natural alternative to synthetic capsules to approach health and wellness.
3. Herbal capsules often contain ingredients rich in vitamins, minerals, and antioxidants that contribute to overall health and well-being.
4. Herbal remedies may help balance immune function, preventing overactivity as in allergies or autoimmune conditions.

3. PLAN OF WORK

1. Literature survey
2. Selection of drug
3. Procurement of herbal drug
4. Pre – formulation studies
5. Formulation – Drying Grinding
Mixing of powder
6. Evaluation test – Quality evaluation
Organoleptic evaluation Micromeritics
powder characteristics
7. Result
8. Conclusion

4.LITERATURE SURVEY :

1. Kubota, K. et al (2000.2001) reported antioxidative activity of 1'-acetoxychavicolacetate and its related compounds in the rhizomes of *Alpinia galanga* during .

2. Mahae, N. and Chaiseri, S. (2009) studied Antioxidant activities and antioxidative components in extracts of *Alpinia galan* (L.)& they said 50% ethanol in water was studied for its antioxidant activity and composition in comparison with two other samples based on a waterextract and the essential oil. The antioxidant activities were determined using the 2,2-diphenyl- 1-picrylhydrazyl.

3. Pattanayak et al., (2010)

The *Azadirachta indica* (neem) is an evergreen tree belonging to the family of Meliaceae. Multiple studies have been confirmed the anti-diabetic and anti-hypertension, anti-hyperlipidemia, and antiobesity effects of neem..

4. Sharma, S., Ghataury, S. K., Sarathe, A., Dubey, G., & Parkhe, G. (2019).1535-1540

Phyllanthus emblica extracts alleviates leptin resistance and lipid accumulation by inhibiting methylglyoxal production .

5. Gonzalez-Lamothe R, Mitchell G, Gattuso M, Diarra MS (2009).3400–3419

Plants are continuously in contact with different microorganisms such as viruses, bacteria and fungi. The interactions between plants and microbes may be beneficial for the plants, but many plantassociated microbes are pathogens which affect development, reproduction, and growth of the plants.

6. Aly et al., 2005

Black pepper has been found to possess thermogenic properties, which means it can increase thebody's metabolic rate, leading to more calories burned. The compound responsible for this thermogenic effect is called piperine, which is abundant in black pepper

7. Abtahifroushami et al.,(2014)112-121

Cumin may boost your metabolism, lower cholesterol level, and help decrease your blood sugar. Studies confirm that consuming ground cumin helps some people who are trying to losing weight..

8. Ziegenfuss TM, Hofheins JE, Mendel RW 2(006):45–53

Cuminum cyminum L. and lime intake may decrease weight through inhibiting serotonin re-uptake insynaptic clefts (12), increased lipolysis and reduced appetite (13). However, these findings might in turn suggest the importance of cumin plus lime co-supplementation to treat patients with obesity, the current study hypothesized that cumin plus lime co-administration may contribute to management of obesity and metabolic status. Authors are aware of no reports evaluating the effects of *C. cyminum* L. and lime co-administration on markers of insulin resistance, lipid concentrations and biomarkers of oxidative stress in subjects with overweightand obesity.

5.MATERIALS AND METHODS :

INGREDIENT : Herbs and spices used in the present formulation work have been procured fromauthenticated supplier and are research-grade. Some material obtained from pharmacognocny lab and some are obtained from marketed as mentioned in table no.1

Sr no.	Ingredient	Part used	Properties
1	<i>Alpinia galangol</i>	Rhizome powder	Antiobesity Antidiabetic
2	<i>Azadirecta indica</i>	Leaves powder	Antihypertensive Antiobesity

3	Phyllanthus emblica	Dried fruit powder	Anti inflammatory Antiobesity
4	Piper nigrum	Dried fruit powder	Antidiabetic Antiobesity
5	Cuminum cyminum	Dried fruit powder	Antiobesity antioxidant antidiabetic

Table no . 1. List of Ingredient

DRUG PROFILE



A) ALPINIA GALANGOL

Fig No :1 Alpinia Galangol

Botanical name: Zinziber Officinale

Biological source : Ginger consist of rhizomes of Zingiber officinale.

Family: Zingiberaceae

Action on immunity system :

It known to be most healthy and delicious herbs in the world .The warming effect ofthe herb hasanti inflammatory properties that help in reducing risk of osteoarthritis and sore muscles .It helpsto improve the immunity and fight against infections

.alpinia galangol has been an old remedy forflu and common cold .Ginger is particularly good in preventing respiratory tract infection. It hasdigestive stimulantaction . it protect the gastro-intestinal tract. It also causes antiobetic activity.

Active constituent :

It contains a number of pungent constituent and active ingredient . steam distillation ofpowderedginger produces ginger oil which contain a high proportion of sesquiterpenehydrocarbon , predominantly zingiberene. Zingeron and shogaol are found in small amount in fresh ginger and in large amount in dried or extracted product.

Mechanism of action :

The aromatic, spasmolytic , carminative , and absorbent properties of ginger suggest that it has direct effect on the gastrointestinal tract. Ginger is well known as its anti – inflammatory , antifungal, and anti-cancer properties, antidiabetic and antiobesity.

B) AZADIRECTA INDICA



Fig No : 2 Azadirachta Indica

Botanical name: neem

Biological source : leaves consist of azadirachta indica

Family: Meliaceae

Action on immunity system :

It known to be most healthy and delicious herbs in the world .The warming effect of the herb has anti inflammatory properties that help in reducing risk of osteoarthritis and sore muscles .It helps to improve the immunity and fight against infections .alpinia galangol has been an old remedy for flu and common cold .neem is particularly good in preventing respiratory tract infection. It has digestive stimulant action . it protect the gastro-intestinal tract. It also causes antiobetic activity.

Active constituent :

It contains a number of pungent constituent and active ingredient . steam distillation of powdered ginger produces ginger oil which contain a high proportion of azadirachtin
,nimbedin,nimbidiol,sodium nimbinat,geducin,quercetin.



C) PHYLLANTHUS EMBLICA

Fig No 3: Phyllanthus Emblica

Botanical name: awla

Biological source:dried ripe fruit of *Phyllanthus emblica*

Family: *Phyllanthaceae*

Action on immunity system:

Tulsi is rich in vitamin C and zinc. It thus acts as a natural immunity booster and keeps infection at bay. It has immense anti-bacterial, anti-viral, and anti-fungal properties which protect us from a variety of infection. Tulsi will awaken the mind bringing mental clarity which also relaxes the nervous system.

Active constituent :

There are many chemical constituents present in *Ocimum sanctum* such as oleanolic acid, rosmarinic acid, ursolic acid, eugenol, linalool, carvacrol, beta-elemene, betacaryophyllene, and germacrene. *Ocimum sanctum* is considered to have diuretic, stimulant property.

Mechanism of action :

Awla has a unique combination of actions that include anti-microbial, mosquito repellent, anti-diarrheal, anti-oxidant, anti-cataract, anti-inflammatory, chemoprotective, radio-protective. The leaves of this easily available plant are rich in phytonutrient, chlorophyll, vitamin, and

D) PIPER NIGRUM:



Fig. no.4. PIPER NIGRUM

Botanical name : miri

Biological source :dried ripe fruit of *piper nigrum*.

Family : *pipericeae*

Action on immunity system :

Piper is the most biologically active component of the and appears to be an anti-microbial agent. Curcumin cooperates with various cells such as macrophages, dendritic cell, B, T and natural killer cell to modify the body's defence capacity.

Active constituent :

Black pepper (*Piper nigrum* L.) is a very popular dried fruit-based condiment rich in the piperidine alkaloid piperine which is responsible for the pungent taste of pepper. In an experimental study, rats were fed a fat-rich diet that led to a significant reduction in GST and other antioxidant enzymes levels in the liver, heart, kidney, intestine, and aorta of rats. The original levels of GST and the other enzymes were restored by supplementation with either black pepper (0.5 g/kg BW) or piperine (0.02 g/kg BW) [173]. According to a previous report, piperine also displayed antioxidant activity. Taken together, it can be

E) CUMINUM CYMINUM :



Fig. no.5.CUMINUM CYMINUM

Botanical name : jeera

Biological source : jeera is the dried fruit of Cuminum cyminum

family: Apiaceace

Action on immunity system :

Cuminum has been well known as an immune modulator . root (mostly), stem , leaves of ginseng and their extract have been used for maintaining immune homeostasis and enhancing resistance to illness or immune system . it protect the organ against inflammation . it prevent the viral entry and replication and stabilize the immune homeostasis.

Active constituent :

Panax ginseng contain triterpene glycosides or saponins , commonly referred to as ginsenosides. Many active compound can be found in all part of plant including amino acid , alkaloid , phenols , proteins , polypeptide , and vitamin B1 and B2.

List of Instruments :

Sr no	Instrument name	Model
1	Digital weighing balance	DWB 1000

Table.no.2. List of Instruments

List of Equipment:

Sr. no	Equipment name	Model
1	Morter and pestle	
2	Mixing tank	

3	Powder mixer	
4	Sieve	No.80

Table .no.3.List of Equipment

List of Glassware :

Sr no	Glassware name
1	Beaker
2	Funnel
3	Glass rod
4	Conical flask

Table.no.2. List of Instruments

5 METHODOLOGY

➤ Quantity of Ingredients :

Sr no	material	F1	F2	F3
1	Alpinia galangol	8gm	8gm	8gm
3	Phyllanthus emblica	16gm	16gm	16gm
4	Piper nigrum	10gm	9.5gm	9gm
5	Cuminum cyminum	8.5gm	8.5gm	8.5gm

Table. no.5.Quantity of Ingredients

Quantity of excipients

1	Honey	1ml	1ml	1ml
2	Starch	0.5gm	0.5gm	0.5gm
3	Magnesium stearte	0.25gm	0.25gm	0.25gm

FLOW CHART

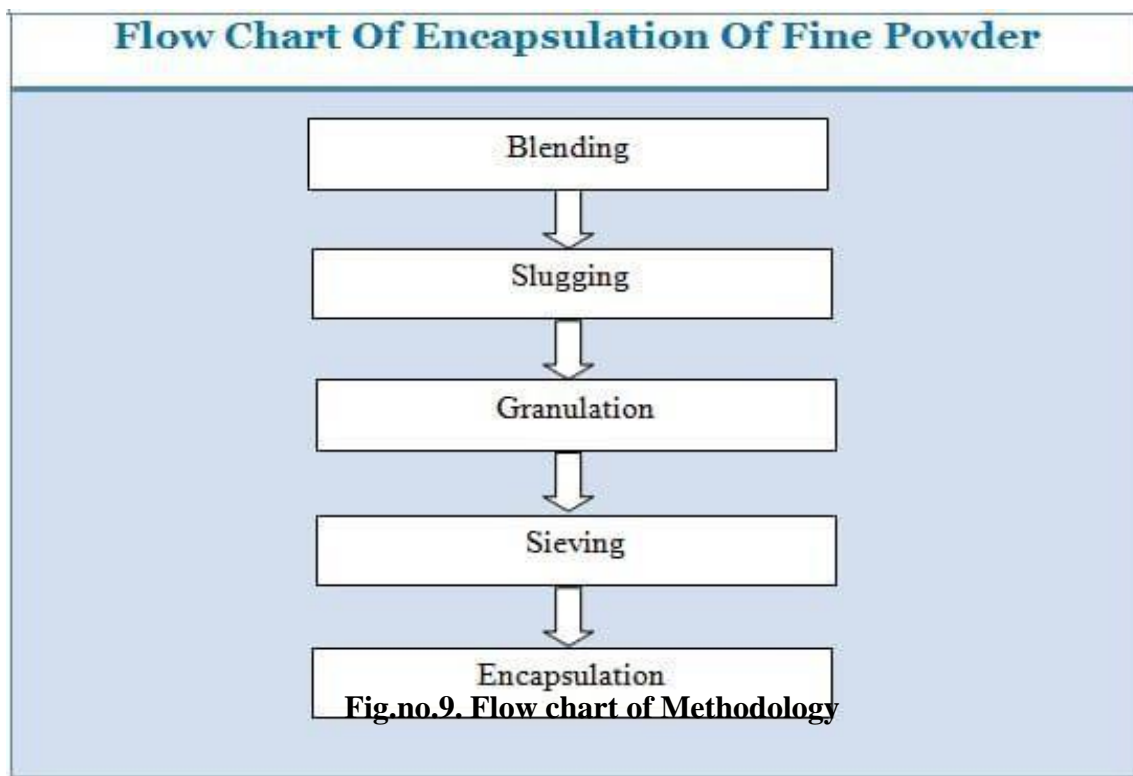


Fig.no.9. Flow chart of Methodology

Figure.9.

Process Flow Chart initially includes the selection and preparation of the raw materials. Each main ingredient was separated , contained in a food grade material, then subjected to sun dryingto produce powdered substances.

Sr no	Ingredient	Type of drying	Time required for drying
1	Alpinia galangol	Sun dry	87 hours
2	Azadirecta indica	Sun dry	10 hours
3	Phyllanthus emblica	Open sun drying	42 hours to56 hours
4	Piper nigrum	Hot air dring (38°C)	72 – 190 hours
5	Cuminum cyminum	Natural drying	8 to 16 weeks

Table no.6. Drying

Drying :

Sun drying is the evaporation of water from the product by sun, or solar heat , assisted by movement of surrounding air. Alpinia galangol,azadirecta indica ,Phyllanthus emblica,,piper nigrum,Cuminum cyminum . after the collection of Neem , it was in sundry for 48 hours. Place the trays in an area withdirect sunlight. The sun's heat helps to evaporate moisture from the herbs, drying them naturally. It's essential to monitor the weather conditions and choose sunny, dry days for optimal drying. The dryingtime varies depending on factors such as the type of herbs, weather conditions, and thickness of the layers. It may take several days to a week for the herbs to fully dry.



Fig.no.10. Drying of drugs

Powder Formulation :

Prepare the material : Ensuring that the material you want to powder is clean and free from any impurities. If needed, remove any stems, seeds, or other undesirable parts.

Break Down the Material: Depending on the material's size and texture, you may need to break it down further before sieving. Using a mortar and pestle, grind the material until it becomes finer.

Set Up the Sieve: Place the sieve with size number 80 over a clean, dry container. This container will collect the powdered material that passes through the sieve.

sieve the Material: Pour a small amount of the broken-down material onto the sieve. Use a spoon or spatula to gently press and move the material around on the sieve. This helps to separate the finer particles from any larger pieces.

Collect the Powder: The finer particles will pass through the sieve mesh and collect in the container below. Shake the sieve gently to encourage the finer particles to pass through. Continue this process until all of the material has been sieved.

Store the Powder: Once you have collected all the powdered material, transfer it to a clean, dry container with a tight-fitting lid. Store the powdered material in a cool, dry place away from direct sunlight.



FIG NO:11.Sieving of powder

Mixing of powder :

powder of different mesh size about 80. Then all powdered ingredient are mixed together with the help of powder mixer



Fig no12 : mixing of powders

Preparation granules

Formula of Polyherbal formulation

The polyherbal formulation (capsules) contained the hydro-alcoholic extracts of *Alpinia ganagol*, *azadiracta indica*, *Phyllanthus emblica*, *piper nigrum*, *Cuminum cyminum* in the ratio of 1:1:1:1:1.

Preparation of formulation by wet granulation method

The formulation preparation began with trials by adding a different ratio of binders and selecting the quantity of lubricants and preservatives, and finally the procedure was *Alpinia ganagol*, *azadiracta indica*, *Phyllanthus emblica*, *piper nigrum*, *Cuminum cyminum* extracts were powdered (sieve 40), and mixed in the ratio of 1:1:1:1:1 and taken for the preparation of capsules by wet granulation technique using 5% starch paste as a binder. The wet mass was passed through sieve number 22 to obtain granules. The granules were dried at 45°C in a tray [25].

7. EVALUATION PARAMETER :

Quality evaluation :

Quality evaluation of prepared herbal capsules was essential for the efficacy, safety, determination both physicochemical and phytochemical evaluation was carried out by comparing it with the standard parameter. Through comprehensive quality evaluation encompassing ingredient quality, manufacturing process, stability, efficacy, safety. herbal capsule powder can be ensured to meet regulatory standards and provide consumers with a high-quality product that supports immune health effectively.

Organoleptic evaluation :

Organoleptic evaluation on the parameter like color, odor, taste and texture was carried out. Color and texture was evaluated by vision and taste sensation respectively. For taste and odor evaluation a team of 3 taste and odor sensitive persons was formed and random sampling was performed.

➤ Sensory Parameters:

- Taste: Evaluate the taste profile, considering factors such as sweetness, bitterness, astringency, and overall flavor balance.
- Aroma: Assess the aroma for intensity, complexity, and any off-notes. Note any herbal or medicinal scents.

- Color: Examine the color of the powder, noting its hue, brightness, and uniformity. Ensure it matches the expected color for herbal ingredients used.
- Texture: Evaluate the texture, noting the fineness of the powder, any grittiness, or clumping.

➤ Evaluation Methods:

- Visual Inspection: Observe the powder's color and uniformity under standardized lighting conditions.
- Taste Testing: Dissolve the powder in water or another suitable solvent and taste it to evaluate its flavor profile.
- Texture Analysis: Feel the powder between fingers to assess its texture, noting any irregularities.

Micromeritics powder characteristic :

General powder characteristics include evaluation of those parameters which are going to affect the external properties like flow properties, appearance, packaging criteria etc. of the preparation. Characteristics evaluated under this section are powder form, particle size, angle of repose, and bulk density. Samples for all these evaluations were at three different levels i.e. from top, middle, and lower level.

1) particle size :

Particle size is a parameter, which could affect various properties like spreadability, grittiness etc., particle size was determined by sieving method by using I.P. standard sieves by mechanical shaking for 10 minutes.

2) Bulk density :

Bulk density is an important property for the packaging of product. Bulk density depends on particle size, particle size distribution, and cohesiveness of particle. For measuring the bulk density, a weighted amount of powder was introduced in 100ml graduated cylinder. The cylinder is fixed on the bulk density apparatus and bulk density was calculated.

$$D = M / V$$

Where,

D = bulk density

M = weight of full container
V = container volume

3) Tapped density :

After carrying out the procedure as given in the measurement of bulk density, the cylinder containing the sample was tapped 500 times initially followed by an additional 250 taps of 750 times until the difference between succeeding measurements is less than 2% and then the tapped volume, V_t was measured to the nearest graduated unit.

$$\text{Tapped density} = M / V_t$$

Where,

M = weight of powder

V_t = minimum volume occupied after tapping

4) Angle of repose :



Fig no. 13 . Determination of Angle of repose

Angle of repose affects the flow properties of the powder. It was determined by the glass funnel method . a distance of 6.5 cm is maintained between the graph paper and the bottom powder. It was determined by glass funnel . Flowing is continued till the top of the heap touches the bottom of funnel.

$$\Theta = \tan^{-1} h/r$$

Where,

$$\Theta = \text{angle of repose} = \frac{\text{height}}{\text{radius}}$$

r = radius

2) Surface area :

Surface area of the powder can be calculated using particle size data obtained from any suitable method . Specific surface area i.e. surface area per unit weight (Sw) or unit volume (Sv) can be estimated follows:

$$S_w = \frac{\text{surface area of particle}}{\text{volume of particle}}$$

Physical evaluation :

Physical evaluation includes determination of the extractive values , ash value , moisture content and Ph. 5gm of powder immunity booster was macerated with different solvents and kept for 24 hours , filtered and solvent was evaporated dried extracts were weighted to calculate extractive value % w/w .

- 1) Ash value: It is calculated to determine the inorganic content which is characteristic for a herb. About 2 gm of powder drug was taken in crucible previously ignited and weighed. Record to 4 decimal places . Ash sample at 600 ° for 2 hours . Cool in desiccator and weigh within 1 h after reaching room temperature . Weigh ashed sample and record weight to 4 decimal places . Calculate percent ash and record value with one decimal .
- 2) Moisture content : Moisture content in the formulation is very important as it contains herbs which are liable to be attacked by weather . 2gm of powder was taken and kept in an oven and dried up to two constant readings and % moisture content

was calculated as w/w. Temperature is maintained at 105° C for a period for 16 hours.



Fig no .14. Determination of ash value

- 3) pH : pH affect the effect of powder on body . 1gm of powder was taken and 9ml of distilled water was added to it . pH of the resulting solution was calculated using pH meter at 37° C.
- 4) Percentage compressibility index : It is directly related to the relative flow rate cohesiveness and particle size . it is simple , fast and popular method of presiding powder flow characters. It can be obtained from bulk density measurements.

$$\% \text{ compressibility index} = \frac{\text{tapped density} - \text{bulk density}}{\text{tapped density}} * 100$$

8. RESULT AND DISCUSSION:

TEST RESULT:

➤ Organoleptic evaluation:

The prepared herbal immunity booster showed good characteristics in terms of appearance on the visual inspection of the formulation. The herbal immunity booster is soluble in water. Texture of herbal immunity booster powder is fine smooth and flavor is sweet so every age can easily consumed. The colour of powder was found to be yellowish green.

Quality attribute	F1	F2	F3
Appearance	Dark brown	Dark brown	Dark brown
Texture	Fine smooth	Fine smooth	Fine smooth
Flavor	bitter	bitter	bitter
Odour	Slight	Slight	Slight

Table no.8.Summary of organoleptic evaluation

➤ Micromeritics powder characteristics:

The prepared herbal immunity booster powder particle size has found in range between 10-15um and surface area is 0.20 cm². Tye angle of repose is 32°. Bulk density was found to be 0.8gm/cc. Tapped density of immunity booster powder was found to be 0.9gm/cc.

Sr no.	Test	F1	F 2	F3
1	Particle size	10-15um	10-15 um	10-15 um
2	Surface area	0.20cm ²	0.20cm ²	0.20 cm ²
3	Angle of repose	32°	32 °	32°
4	Bulk density	0.8gm/cc	0.8gm/cc	0.8gm/cc
5	Tapped density	0.9gm/cc	0.9 gm /cc	0.9gm/cc

Development of polyherbal formulation for antiobesity Table no.9.
Micromeritics powder characteristics

Ash value was found to be 7.62%w/w. The moisture content was found to be 2.01% w/w. The prepared formulations pH was found to be 4.12 .and the % compressibility index was found to be in range between 12-16.

Sr no	Test	F1	F2	F3
1	Ash value	7.59 % w/w	7.60 %w/w	7.62 % w/w
2	Moisture content	2.1 % w/w	2.1 % w/	2.01 % w/w
3	pH	7	7	7
4	% compressibility index	12-16	12-16	12-16

Table.no.10 .Result of physical evaluation

CAPSULE EVALUATION RESULT:

Parameters	Observation
Description	Light brown granule in blue cap and
	body "0" size capsule
Colour	Light brown granule
Odour	Characteristic odour
Taste	Bitter taste

Table no 11: ORGANOLEPTIC PROPERTIES OF CAPSULES

Parameter	Observation
Average weight	574.31 ±4.5mg
Weight variation	Within I.P. Limit
Moister content(LOD)	2.51±0.1 % w/w
Disintegration time	10.9±0.5(min)
pH(1% aqueous solution)	5.52± 0.68

Table no 12: EVALUATION OF CAPSULES

5.CONCLUSION :

In this study a Polyherbal capsule was formulated trail batch with the individually standardized raw materials of *Alpinia ganagol*, *azadiracta indica*, *Phyllanthus emblica*, *piper nigrum*, *Cuminum cyminum* as per Ayurvedic Pharmacopoeia of India. The T4 was considered to be a best batch as it complies with all the pharmacopoeial parameters and was selected for further study.

The combination of plants extracts demonstrated excellent weight and fat reducing effect provided rationale for usage and generates conviction among users as effective formulae for weight management and holds the potential to treat obesity. However, the more detailed phytochemical and clinical study should be carried out to endorse the efficacy in human.

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