A REVIEW ON: "FORMULATION AND EVALUATION OF HERBAL EDIBLE GUMMIES CONTAINING ASHWAGANDHA"

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ABSTRACT

The aim of this study is to formulate gummies using natural ingredients.

Ashwagandha powder as an API and other excipients like honey, gelatine, agar-agar and orange juice. Ashwagandha (*Withania somnifera*, fam. Solanaceae) is commonly known as "Indian Winter cherry" or "Indian Ginseng". It has been traditionally used in Ayurvedic medicine as a substance that strengthens the nervous system. The potential health benefits of Ashwagandha, particularly in the areas of stress management, cognitive function, and physical performance.

Gummies have been a great way of delivering the active constituents for consumption by children. Their use for adults has gained acceptance as well. Gummies are palatable, chewable, easier to swallow and offer more effortless method for administration as compare to other formulations. Evaluation of gummies for its various physio-chemical parameters such as physical evaluation, pH, weight variation, hedonic test, stickiness and grittiness.

So, the objective of this research work is to produce a drug delivery system for the natural super ingredients with better pharmaceutical and therapeutic properties and making the formulation suitable for patients and minimizing drawbacks. Thereby improving the patient compliance and convenience in administration.

INTRODUCTION

The oral route is the most common route of drug administration. Till today, it is still a widely preferred and acceptable route among patients owing to its advantages, such as ease of administration, safeness, and convenience for self-administration.

However, one of the obstacles to oral drug delivery experienced by many patients, particularly paediatric and geriatric population, is dysphagia. Dysphagia causes difficulties in swallowing conventional solid oral medicines and the risk of choking by liquid preparations. Consequently, patients usually try to crush hard tablets or open capsules and mix them with food or water to become swallowing easily. Such behaviour can result in dosing inaccuracy and changing of drug release and absorption, as well as undesirable drug taste palatability.

Today, one of the appropriate potential alternative oral dosage forms is gummies, similar to gelatinous food. The gummies can address swallowing problems, ensure patient safety, and ease of handle and taken without water. Thus, gummies can improve patient compliance in addition to their flavouring taste and pleasant appearance. Gummies have advantages of both solid and liquid preparations.

Gummies have been a great way of delivering the active constituents for consumption by children. Their use for adults has gained acceptance as well.

The gummies industry is expected to reach 4.17 million US dollars by 2025. Gelatine has been the favoured gelling agent for these kinds of preparation.

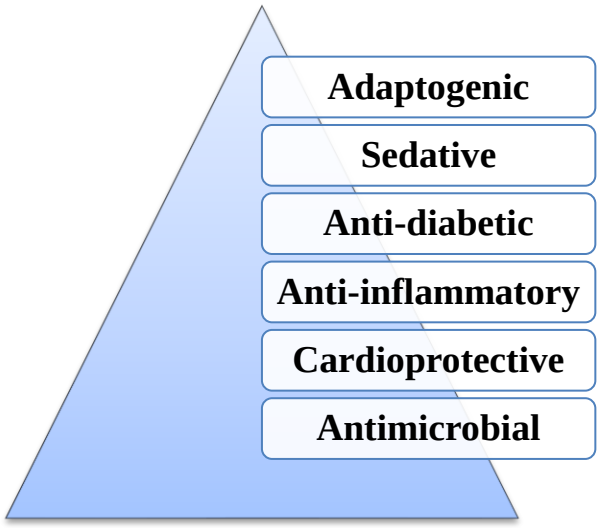
Ashwagandha

Ashwagandha (*Withania somnifera*, fam. Solanaceae) is commonly known as "Indian Winter cherry" or "Indian Ginseng". The raw material used in medicine is the root, and the name "Ashwagandha" is derived from the word "ashwa", meaning horse. It is believed that after consuming the root, one gains powers similar to that of a horse. The second part of the name "gandha," means fragrance and refers to the characteristic smell of the fresh root of the plant. Since ancient times, it has been traditionally used in Ayurvedic medicine as a substance that strengthens the nervous system.

Chemical composition of ashwagandha

The biologically active chemical constituents of *Withania somnifera* (WS) include alkaloids (isopelletierine, anaferine, cuseohygrine, anahygrine, etc.), steroidal lactones (withanolides, withaferins) and saponins. Sitoindosides and acylsterylglucosides in Ashwagandha are anti-stress agents. Active principles of Ashwagandha, for instance the sitoindosides VII-X and Withaferin-A, have been shown to have significant anti-stress activity against acute models of experimental stress. Many of its constituents support immunomodulatory actions. The aerial parts of *Withania somnifera* yielded 5-dehydroxy withanolide-R and withasomniferin-A

Health benefits of ashwagandha



Contraindications of ashwagandha

Certain groups of people who should avoid taking it include, People with autoimmune diseases, thyroid disorders, and those who are pregnant or breastfeeding. Additionally, if you are allergic to plants in the nightshade family, you should also avoid ashwagandha.

ashwagandha may interact with certain medications, such as sedatives, thyroid hormone replacement therapy, and immunosuppressants. If you are taking any of these medications, it is important to speak with your healthcare provider before taking ashwagandha.

While ashwagandha has been shown to have many potential health benefits, it is not a substitute for medical treatment. If you have any medical conditions or concerns, it is important to speak with your healthcare provider before taking ashwagandha or any other supplements.

Side effects of ashwagandha

While ashwagandha is generally considered safe, it can cause side effects in some people. These may include digestive upset, headaches, and drowsiness. If you experience any of these side effects, you should stop taking ashwagandha and consult to your doctor.

AIM & OBJECTIVE

Aim:
Formulation and evaluation of herbal edible gummies containing ashwagandha.

Objective:
The objective of this research work is to produce a drug delivery system for the natural super ingredients with better pharmaceutical and therapeutic properties and making the formulation suitable for patients and minimizing drawbacks. Thereby improving the patient compliance and convenience in administration.

EXCIPIENTS PROFILE

Sr. No.	Ingredients	Role of Ingredients
1)	Orange juice	Vehicle & Flaouring agent
2)	Honey	Sweetener
3)	Ashwagandha	Active ingredient
4)	Gelatine	Gelling agent
5)	Agar-agar	Thickening agent

EXPERIMENTAL WORK

Sr. No.	Ingredients	Quantity
1)	Orange juice	250ml
2)	Honey	25gm
3)	Ashwagandha	5gm
4)	Gelatine	10gm
5)	Agar-agar	5gm

Figure: Ingredients used in experimental work.

Procedure:

1) Take clean and dry glassware for experiment, before use.

2) Take 250ml of orange juice in water bath. Add Agar-agar, honey and gelatine with stirring. Heating at 70-75°C.

3) Then add ashwagandha powder with continuous stirring to make mixture uniform.

4) After complete homogenization, the mixture is transfer to molds.

5) Cool the mixture at room temperature for 30 min.

6) Then place in the refrigerator for 24 hours.

7) After 24 hours, gummies remove from the molds and stored in closed container, that keep in refrigerator.

EVALUATION PARAMETERS

Physical evaluation
The medicated jelly can be examined physically for appearance like colour, odour, transparency, etc.

Stickiness and grittiness
Texture of the medicated jelly in terms of stickiness and grittiness can be determined by mildly rubbing the jelly between fingers.

pH
The pH determination test was carried out by dipping the pH meter into the gel mass water bath and poured into the mold. The pH value of the preparation is measured by looking at the pH value listed on the pH meter.

Weight variation
The weight variation was conducted by weighing 10 gummies individually and average weight and standard deviation were calculated.

Hedonic test
The hedonic test involves having panelists respond by indicating whether or not they have consumed the product.

OBSERVATIONS

Sr. No.	Evaluation Test	Observation
1)	Colour	Yellow
2)	Odour	Normal (Orange like)
3)	Taste	Normal (Orange like)
4)	Transparency	Opaque
5)	Texture	Smooth
6)	Stickiness	Non-sticky
7)	Grittiness	Non-gritty
8)	pH	Slightly acidic
9)	Hedonic test	Passes the test
10)	Weight variation	Passes the test

RESULT

In this research gummies were prepared and evaluated by various evaluation parameters.
The ingredients included in the formulation is edible, safe and suitable for consumption.
The preparation and formulation of gummies was done successfully.

Figure: Formulation of herbal gummies.

CONCLUSION

The oral route of administration is the most preferred route by patients. The strategies for enhancing oral solid dosage acceptance by paediatric, geriatric and patients with swallowing difficulties is to formulate the drug as gummies. Gummies are palatable, chewable, easier to swallow and offer more effortless method for administration as compare to other formulations.

Ashwagandha is a super ingredient obtain naturally, it is a plant material that has been used for centuries in traditional medicine systems. Over the years, research has been conducted to investigate the various effects of ashwagandha, and this research has shown that it has multiple beneficial effects on different body systems.

Nature is filled with lots of resources, like Ashwagandha many more herbal drugs exists in nature, with better therapeutic activities and less side effects. To improve their acceptance by peoples, we have to discover some innovative ideas and this research is one of them.

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