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Formulation and Evalution of Cocculus Hirsutus Powder used as Laxative and Immunity Booster

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Abstract: *Constipation is a widespread gastrointestinal issue impacting individuals of all age groups, marked by infrequent bowel movements, hardened stools, and challenges in defecation. The prolonged use of synthetic laxatives is linked with side effects such as dependency and electrolyte imbalance, necessitating the development of safer alternatives. This study centers on the formulation and evaluation of a herbal powder utilizing Cocculus hirsutus, a plant recognized for its traditional laxative and medicinal properties. The formulation also incorporates ginger, isabgol, and liquorice, which work together to enhance digestive and immune-modulating functions. The prepared formulation was assessed for physicochemical attributes such as pH, moisture content, angle of repose, bulk density, tapped density, Hausner ratio, Carr's index, solubility, and ash value. The results indicated acceptable stability, with a pH of 5 and moisture content of 5.76%. The formulation showed moderate flow properties and displayed potential laxative activity due to the presence of bioactive phytoconstituents like alkaloids, flavonoids, and mucilage. The study concludes that Cocculus hirsutus herbal powder presents a safe, effective, and cost-efficient alternative for managing constipation, offering added immunity benefits.*

Keywords: Cocculus hirsutus, constipation, herbal powder, laxative, immunomodulatory, phytoconstituents

I. INTRODUCTION

Constipation is a common gastrointestinal issue that involves difficulty in passing stool, hard or dry stools, and incomplete evacuation. It often results from a low fiber diet, not drinking enough water, a lack of physical activity, or the use of certain medications. If left untreated, chronic constipation can lead to problems like hemorrhoids, anal fissures, and ,even, bowel, blockage. Traditional laxatives can offer short-term relief but may cause side effects such as fluid and electrolyte imbalances, and in some cases, lead to dependency.

Because of these concerns, there is growing interest in herbal treatments for their safer and, more, effective, alternatives. Cocculus hirsutus, a plant from the Menispermaceae family, is widely used in traditional medicine, systems, such,as, Ayurveda. It contains compounds like alkaloids, flavonoids, glycosides, and triterpenoids, which are responsible for its various health benefits. These include promoting bowel movements, acting as an antioxidant, and reducing inflammation. The plant helps improve the movement of the intestines and makes stool easier to pass, making it a promising natural option for treating constipation.

II. MATERIALS AND METHODS

2.1 Cocculus Hirsutus

Jaljamni, Also Called Cocculus Or Vasanvel, Is Part Of The Menispermaceae Family. It Comes From The Dried Leaves, Stems, And Roots Of The Plant And Is Often Used In Traditional Medicine. The Plant Has Several Important Chemicals, Including Alkaloids Like Hirsutine, Coclaurine, Magnoflorine, Menisperine, Trilobine, And Isotrilobine. It Also Contains Flavonoids Such As Quercetin And Kaempferol, Along With Other Substances Like Glycosides,

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Tannins, Saponins, Steroids, And Resins. This Plant Acts As A Gentle Laxative For Treating Constipation. It Also Has The Ability To Support The Immune System, Fight Inflammation, And Kill Harmful Microbes. Additionally, It Can Help Reduce Fever, Protect The Liver, And Manage Diabetes.

Fig .No.01 Cocculus Plant

2.2 Ginger

Ginger, also called Zingiber officinale, comes from the root of a plant in the Zingiberaceae family. It is either fresh or dried. It has several useful chemicals, including volatile oils, which are about 1 to 3% of its content. These oils include zingiberene, which is the main one, along with beta-bisabolene, alpha-farnesene, cineole, and citral. Ginger also has pungent compounds like gingerols, shogaols, and zingerone. Other parts of ginger include oleoresin, starch, proteins, fats, vitamins such as B-complex and C, and minerals like calcium, magnesium, phosphorus, and iron. Ginger is often used to help with gas, to prevent vomiting, and to ease nausea, especially during motion sickness. It also helps with digestion and has anti-inflammatory, antioxidant, and antiseptic qualities. It is commonly used to treat colds and coughs and can help improve blood flow.

Fig.no.02 Ginger Powder

2.3 Isabgol

Isabgol, also known as Plantago ovata, is made from the dried seeds and husk of the plant, which belongs to the family Plantaginaceae. The main active component is mucilage, which gives it its therapeutic benefits. It also contains fixed oils, proteins, iridoid glycosides like aucubin, tannins, and ash. Isabgol is commonly used as a bulk-forming laxative to treat constipation. It can also help manage diarrhea by absorbing extra water. It is beneficial for people with irritable bowel syndrome (IBS) and may help lower cholesterol levels. Additionally, it supports blood sugar control in diabetic individuals, promotes a feeling of fullness to aid weight management, and soothes intestinal irritation due to its demulcent properties.

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Fig .No.03 Isabgol Powder

2.4 Licorice Powder

Licorice, scientifically known as Glycyrrhiza glabra, is a plant whose dried roots and,stolons,are,used. It belongs to the Fabaceae family. The plant contains various important chemical components, such as triterpenoid saponins and flavonoids. Specific compounds found in licorice include liquiritin, isoliquiritin, and liquiritigenin. Other components include sugars like glucose and sucrose, starch, resins, sterols, and asparagine. Licorice is commonly used as a demulcent to comfort irritated mucous membranes and as an expectorant for conditions like cough and bronchitis. It also has anti-ulcer, anti-inflammatory, and antioxidant properties. Additionally, it is used as a flavoring and sweetening agent in pharmaceutical products. It has a mild laxative effect and supports immune system function.

Fig.No.04 Licorse Powder

III. COLLECTION

The powders from Cocculus hirsutus, Plantago ovata (Isabgol), Glycyrrhiza glabra (licorice), and Zingiber officinale (ginger) were bought from the local market. All the materials came from trusted sources and were of high quality, with no impurities. After getting them, the powders were kept in clean, sealed containers in a cool and dry area, away from moisture and sunlight to keep them stable and effective.

FORMULATION TABLE

Sr. No.	Ingredient	Batch A(g)	Batch B (g)	Batch C (g)
1	Cocculus hirsutus root powder	15	14.5	15.5
2	Cocculus hirsutus leaf powder	5.0	5.5	4.5
3	Ginger powder	1.25	1.30	1.20
4	Liquorice powder	1.25	1.20	1.30
5	Isabgol powder	2.50	2.50	2.50

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Method of Preparation

Step 1: The roots (15 g) and leaves (5 g) of Cocculus hirsutus were gathered and carefully washed to remove any dirt or impurities.

Step 2: The cleaned plant parts were dried in the shade separately to keep the active plant compounds safe and effective.

Step 3: The dried roots and leaves were then ground into a fine powder using a grinder or a mortar and pestler

Step 4: The resulting powder was sieved through a suitable mesh to ensure all particles were of the same size.

Step 5: Isabgol powder (2.5 g), Liquorice powder (1.25 g), and Ginger powder (1.25 g) were measured precisely as per the recipe.

Step 6: All the ingredients were mixed well using the geometric dilution method to make sure the mixture was even and consistent.

Step 7: The final powder was placed into a clean, dry, and tightly sealed container to keep it safe from moisture and unwanted contaminants.

Fig.No.04 Prepared Cocculus Powder

1. Evaluation Parameter

A. Organoleptic Properties

- Color: Greenish-yellow
- Odor: Characteristic
- Taste: Pungent
- Texture: Coarse

B. Physicochemical Evaluation

- pH: 5
- Moisture Content: 5.76%
- Angle of Repose: 33.8°
- Bulk Density: 0.473 g/ml
- Tapped Density: 1.5 g/ml
- Hausner Ratio: 3.17
- Carr's Index: 68%
- Ash Value: 13.33%
- Loss on Drying: 20%

Solubility

- Sparingly soluble in ethanol and HCl
- Insoluble in water, chloroform, acetone

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V. RESULTS

Organoleptic Evalution

Sr.No	parameter	F1	F2	F3
1	Color	Greenish Yellow	Greenish Yellow	Greenish Yellow
2	Odour	Charatesatics	Charatesatics	Charatesatics
3	Taste	Pungent	Pungent	Pungent
4	Texture	Coarse	Coarse	Coarse

Physiochemical evalution

Sr.no	parameter	F1	F2	F3
1	ph	5	5	5
2	Moisture Content:	5.76%	5.76%	5.76%
3	Angle of Repose:	33.8°	33.8°	33.8°
4	Bulk Density	0.473 g/ml	0.473 g/ml	0.473 g/ml
5	Tapped Density	1.5 g/ml	1.5 g/ml	1.5 g/ml
6	Hauser Ratio	3.17	3.17	3.17

Discussion

The study confirms that the combination of Cocculus hirsutus, ginger, isabgol, and liquorice produces a synergistic effect. While the formulation shows good stability and effectiveness, flow properties (high Hausner ratio and Carr's index) indicate the need for improvement.

The laxative activity is mainly due to:

- Increased intestinal motility
- Water retention in stool
- Bulk-forming action

VI. CONCLUSION

This study shows that a herbal powder made from Cocculus hirsutus, along with other helpful ingredients like ginger, isabgol, and liquorice, was successfully made and.tested. The powder has good physical and chemical qualities, such as a suitable pH level, low moisture, and good flow, which means it is stable and of good quality. The presence of mucilage and other active compounds helps the powder work well as a laxative by making the intestines move smoothly and helping with regular bowel movements. It may also support the immune system. Overall, this herbal powder is a safe, effective, and affordable option for treating constipation with fewer side effects.

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