



Development and Formulation of Herbal Anti-Emetic Candy for Nausea and Vomiting

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Received: December 04, 2024

Published: December 17, 2024

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Abstract

Nausea and vomiting are common symptoms associated with various medical conditions, treatments, and physiological changes such as pregnancy and motion sickness. The use of herbal remedies for these conditions is gaining popularity due to their safety, efficacy, and minimal side effects. This study focuses on the development and formulation of a herbal anti-emetic candy designed to alleviate nausea and vomiting using natural ingredients.

Key herbs known for their anti-emetic properties, such as ginger (*Zingiber officinale*), peppermint (*Mentha piperita*), and clove (*Syzygium aromaticum*), are selected based on their therapeutic potential. These ingredients are formulated into a palatable and convenient candy dosage form. The formulation process involves optimizing parameters such as flavor, texture, stability, and bio-availability of active components.

Preliminary evaluations include phytochemical screening of the selected herbal extracts, taste-masking techniques, and stability studies. The candy is subjected to *in-vitro* and *in-vivo* tests to assess its anti-emetic efficacy and safety. The results are compared with conventional anti-emetic medications to evaluate its potential as a natural alternative.

This research aims to provide an innovative, patient-friendly solution to manage nausea and vomiting, particularly in populations such as children, pregnant women, and individuals undergoing chemotherapy, who often seek safer therapeutic options. The findings are expected to contribute to the development of effective herbal-based interventions in the field of natural medicine.

Keywords: Nausea; Vomiting; Herbs

Introduction

Nausea and vomiting are the Initial facing problem in pregnancy. All over the world women facing this type of problem in starting phase of pregnancy. In initial phase of pregnancy, the women facing a several trouble like – Morning Sickness, Hyperemesis Gravidarum. In India, the percentage of hyperemesis gravidarum ranges from 0.3% to 2% in per 1000 pregnant women (roughly 5 women in per 1000 pregnant women) all around the earth 70% to 80% of pregnant women experiences morning sickness. Hyperemesis gravidarum, HYPHER – High, EMESIS – spew up, GRAVIDARM – Pregnant women. It is a state which involve maximum phase of morning sickness along with nausea, spew up, weight loss which show elevated level of symptom. In the pregnancy, the women

have many hormonal imbalances. The main hormone is estrogen and progesterone, the increasement of hormone (estrogen and progesterone) that the source of nausea and spew up in pregnant women. The estrogen and progesterone hormone controlled by Human Chorionic Gonadotropin (HCG) which exists in the serum of placenta. The pregnant women having morning sickness, nausea, and spew up greater than 5 Times a day that will be harm for pregnant women and their fetus due to imbalanced diet and insufficiency of nutrition. Almost all pregnant women observe nausea and vomiting as a normal action during pregnancy. Half of the pregnant women in world- wide feels uncomfortable in daily activities routine. The first trimester of pregnant women feeling uncomfortable due to increasement of hormone estrogen and progesterone, but it

is important for the fetus development. There are two therapies to control and reduce the nausea and spew up in the pregnancy stage Pharmacological therapy and non-pharmacological therapy.

There are numerous ingredients which are helpful for the treatment of morning sickness, but these all are chemical based which may be toxic for mother and fetus so that the main reason herbal drug is much safer than the chemical drug. Any sweetening agent like candy and chocolate which help to stimulate the brain and release the dopamine, reduce the nausea, and spew up but the chemically sweetener is harmful and toxic for fetus and mother both so the using of herbal candy is more satisfying than the chemically based candy. The herbal candies have also known (natural made sweetener) which stimulate the dopamine releasing. Herbal candy has the property to improve the circulation of blood and it has anti-nausea and anti-vomiting and has rich quantity in antioxidant property. One of the main pharmacological Function of herbal candy is the anti-emetic property (Anti Vomiting) the herbal candy herbal candies have two main roles in pregnancy stimulate brain and suppress vomiting. Herbal candy has not acute toxicity and it is taken as a food or medicine, the herbal candy made up of jaggery and sugar based but sugar candy is not suitable for diabetic patient in pregnancy phase that's because jaggery based candy is more suitable in all condition of pregnancy phase. In pregnancy phase the pregnant women have also a risk of diabetes so the jaggery is a good option instead of sugar, also have more nutrition value to the food, The pregnant women have considerable risk of iron deficiency and blood pressure so the jaggery are useful in such condition.

Role of selected drug in herbal candy

The drug used in the herbal candy is based on their medical application.

Jaggery

It has a non-centrifugal sugar loaded with many essential vitamins and minerals that can be induced in moderate amounts in a pregnancy diet. It also has an antioxidant property to use in the treatment of iron deficiency and regulating blood pressure and it also has an excellent source of iron that helps to treatment of anemia and blood loss in pregnancy phase.



Figure 1: Jaggery.

Clove

It is obtained from the dried flower buds of the clove tree. Clove has a strong, sweet, bitter taste and clove was used in ancient times to treatment of variety of problems. In the pregnancy phase, the cloves are recommended as a natural and herbal remedy for curing of morning sickness, using of clove in duration of pregnancy have main reason are it has ability to alleviate nausea and spew up, clove oil have also an analgesic property to help alleviate during child birth, clove oil have rich in essential vitamin that are important for fetal development. Clove has been used for centuries in traditional medicine to induce labor pain and morning sickness.



Figure 2: Clove.

Cinnamon

Consuming cinnamon in pregnancy gives potent health benefits, it helps to lower the risk of infection because in pregnancy phase the immune system is low so that has a chance of infection for both mother as well as fetus. According to research that cinnamon has potency to improve the systolic and diastolic pressure.



Figure 3: Cinnamon.



Figure 4: Fennel.

Fennel

The fennel seed which are commonly known as Saunf in Hindi is a lightly sweet and aromatic herb for medical purposes. Fennel seed is commonly used for the treatment of nausea and morning sickness that is common in the first trimester of pregnancy. It has anti-flatulent property which helps in the relaxation of intestinal muscles.

In pregnancy phase the women have more susceptible to dental caries so taking fennel is increasement of P^H of saliva that may help to prevention of tooth demineralization.

Material and Method

The selection of material in the preparation of candy is almost used herbal constituent. The material used in the aromatic herbal agent for their flavors and their extraction.

S. No	Ingredient	Biological Name	Family	Quantity	Properties
1	Clove	<i>Syzygium aromaticum</i>	Myrtaceae	1.5ml	Antimicrobial
2	Cinnamon	<i>Cinnamomumzeylanicum</i>	Lauraceae	1.1ml	Antioxidant
3	Fennel	<i>Foeniculum vulgare</i>	Apiaceae	1.8ml	Fight nausea
4	Jaggery	<i>Saccharum officinarum</i>	Poaceae	30gm	Boost immunity
5	Mint	<i>Mentha piperita l.</i>	Lamiaceae	1gm	Flavouring property
6	Curcumin	<i>Rhizome curcuma Longa</i>	Zingiberaceae	0.3gm	Colouring property

Table 1: Ingredients List.

Procedure for making candy - (Methodology)

- Select all herbal (aromatic) agent like – clove, cinnamon, fennel, other ingredients.
- Then it extracted their volatile oil.
- Weight the All ingredient.
- Heat the jaggery until it comes to a boil.
- If a drop of jaggery solution crystalizes in water, stop boiling otherwise, it continues the process.
- After heating process the all-external volatile oil mix according to their requirement and taste.
- Then spread the prepared mixture on the tray and cooled it.
- After the cooling process the shape of candy is given.

Extraction of clove

Bioactive compound can be extracted from the cloves using soxhlet and maceration.



Figure 5: Extraction of clove.

Extraction of fennel

- The highest oil production of fennel is 4.21%
- Fennel seed extracted by hydro distillation.

Preparation of candy

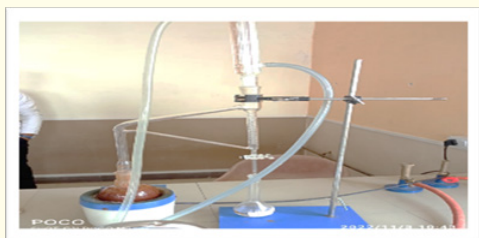


Figure 6: Extractions of Fennel.

Evaluation

- **Appearance:** The general appearance of candy is visual identify and its essential for consumer, acceptance for the control of uniformity, the aspect of visual experience by which object are recognized.
- **Hardness:** The resistance of a material to localized plastic deformation caused by mechanical indentation or abrasion. Hardness is a measure of how much a material resists changes in shape.
- **Thickness:** The amount of ingredient used in the preparation of individual material, and it becomes thick due to material used and it also known as the diameter and the length of the any material.
- **Weight variation:** It is nothing but a defect in which weight differs from the defined ranges given by the standard pharmacopoeias. It is important to confirm uniformity of dosage unit and product safety.
- **Friability:** The tendency of a solid substance to break into smaller pieces under stress or contract, especially by rubbing. It is important for determination of shock absorber for any substance and material.
- **Dissolution:** The process in which a substance forms a solution, the dissolution of a drug is important for bioavailability and therapeutic effectiveness.
- **Moisture content:** It is quantity of water or moisture contained in a material, the weight of water contained in a certain object or material.
- **Drug content uniformity:** The content uniformity is an important quality measure of the final solid dosage form product. It is tested to measure the individual drug content required amount of API.

Result

Appearance

The appearance of candy is simple and it is easier for consumer acceptance. The quality or state being thick.

S. No.	Parameter	Result
1	Colour	Brown
2	Flavour	Sweet
3	Shape	Circle\Biconvex
4	Consistency	Solid

Table 2: Physical appearance test.



Figure 7: Heating the Jaggery and Addition of Extracted Oil.

Hardness

The candy or lozenges are intended to dissolve slowly so they are made intentionally hard. The hardness of candy also depends on the temperature.

S. No.	Sample	Hardness(N)	Temperature
1	1	653	64
2	2	621	60
3	3	755	57
4	4	807	53
5	5	982	50
6	Average	798	55

Table 3: Comparison of hardness with different sample.

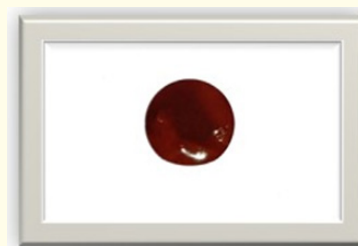


Figure 8: Appearance of candy

Thickness

The thickness is the one of the important Parameter for any type of candy, thickness may be Vary according to their shape and size.

S. No.	Sample	Thickness
1	1	5 mm
2	2	4.5 mm
3	3	4.8 mm
4	4	5.6 mm
5	5	6.2 mm
6	Average	5.2 mm

Table 4: The amount of ingredient in candy have decide the thickness.



Figure 9: Hardness of candy.

Weight variation

The candy preparation there will be slight variation in weight and size. Not more than 1 to 2% variation in the weight.

Sample	Weight Variation
1	5.5 gm
2	5.2 gm
3	5.3 gm

Table 5: Some variation in the sample.



Figure 10: Thickness of candy.

Friability

Candies that do not lose more than 0.5 to 1% of their weight are acceptable.

Sample	Initial Weight	Final Weight	Friability (%)
1	5.2 gm	5 gm	0.76%
2	5.4 gm	5.3 gm	0.28%
3	5.5 gm	5.2 gm	0.92%

Table 6: The friability test of sample.



Figure 11: Friability test of candy.

Discussion

Nausea, vomiting and morning sickness is the common complaint in pregnancy due to hormonal changes mainly estrogen and progesterone in first trimester of pregnant women, using of sweeteners like chocolate, candy help to reduce morning sickness but using of chemically sweeteners may be harmful for both fetus as well as mother that's why using of herbal drug like herbal candy is more suitable or more safer than the chemical candy and using of

jaggery in the herbal drug is also suitable for diabetes patient and the herbal candy is not only for pregnant women it also suitable for child and adult. The herbal drug ingredients are clove, cinnamon, fennel, jaggery, natural coloring and flavoring agent, all are suitable for mother as well as fetus and helping to reduce morning sickness, all ingredients have specific medical application, and all are helping to reduce morning sickness. The methodology of herbal candy is simple: firstly, weighing all ingredients, heating the jaggery after cooling all volatile oil extracted from the herbal drug and cooling or finally shaping it. The evaluation tests have also been performed like appearance, hardness, thickness, weight variation, friability and many more. All these tests have successfully passed, and it has a good taste in buccal cavity which stimulates brain and suppresses morning sickness. The candy maintains vitamin-B6 Level or also maintains electrolyte balance and reduces nauseous effect or frequency of vomiting. Sensory evaluation parameters revealed that brown in color, with a sweet in taste [1-16].



Figure 12: Final product.

Conclusion

The use of herbal candy in the pregnancy phase helping to reduce the nausea, vomiting, and morning sickness. Herbal candy is very beneficial for both mother and fetus because there is no use of excessive chemical constituent. Herbal candy materials are jaggery, clove, cinnamon, and fennel and mint for Flavour or curcumin for color. Using of volatile oil of all extracted herbal drug by the help of Soxhlet apparatus, taking 2 to 3 candies daily will be beneficial and helping to completely reduce the morning sickness in first trimester of pregnancy. All evaluation testing is done and passed, the texture or appearance is simple for the identification like brown in color and sweet in taste, it maintains vit B6 level which helps to reduce nauseous effect. The candies have anti-emetics and anti-nauseous property which help in to reduce the morning sickness.

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