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FORMULATION AND EVALUTION OF EFFERVESCENT TABLET OF MURRYA KOENIGII FOR GASES AND BLOTTING

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ABSTRACT

This study focuses on creating and testing effervescent tablets t hat contain Murraya koenigii, commonly known as curry leave, to help manage gastric issues like gas and bloating. Murraya koenigii is a medicinal plant well known for its digestive, carminative, antioxidant, and anti-inflammatory properties. The aim of this research was to develop a fast-dissolving herbal effervescent tablet that provides rapid relief from gastric discomfort while improving patient compliance and convenience. The tablets were prepared using the direct compression method with suitable excipients including citric acid, tartaric acid, sodium bicarbonate, binders, sweeteners, and flavoring agents. The formulated tablets were evaluated for various pre-compression and post-compression parameters such as angle of repose, bulk density, tapped density, Carr's index, hardness, friability, weight variation, thickness, effervescence time, pH, and drug content uniformity. Stability studies were also performed under suitable storage conditions. The results indicated that the prepared effervescent tablets showed satisfactory physical characteristics, rapid effervescence, acceptable hardness, low friability, and uniform drug content. The formulation demonstrated quick disintegration and improved palatability, making it suitable for immediate relief from gastric discomfort and bloating. The study concludes that Murraya koenigii effervescent

tablets can be considered a promising herbal formulation for digestive wellness and management of gastric problems.

KEYWORDS: Murraya koenigii, Effervescent tablet, Gastroprotective activity, Gas relief, Bloating, Digestive wellness, Carminative, Formulation and evaluation, Effervescence time, Fast-dissolving tablet.

INTRODUCTION

Gastrointestinal problems such as gas formation, acidity, indigestion, and bloating are among the most common health complaints affecting people of all age groups. These conditions are mainly caused by improper dietary habits, stress, sedentary lifestyle, and irregular digestion. Although several synthetic medicines are available for the treatment of gastric discomfort, prolonged use may lead to side effects and reduced patient compliance. Therefore, there is increasing interest in the development of herbal formulations that are safe, effective, and economical for digestive health management.

Herbal medicines have been widely used in traditional systems of medicine due to their therapeutic benefits and minimal adverse effects. Murraya koenigii, commonly known as curry leaves, belongs to the family Rutaceae and is extensively used in Indian cuisine as well as traditional medicine. The plant possesses various pharmacological properties such as antioxidant, anti-inflammatory, antimicrobial, antidiabetic, and carminative activities. Curry leaves are rich in alkaloids, flavonoids, glycosides, vitamins, and essential oils that help improve digestion and reduce gastric discomfort. Traditionally, the leaves have been used to treat nausea, diarrhea, indigestion, flatulence, and bloating.

Effervescent tablets are solid dosage forms that rapidly dissolve in water by releasing carbon dioxide through a reaction between acids and bicarbonates. These tablets offer several advantages including rapid onset of action, enhanced drug dissolution, improved palatability, easy administration, and better patient compliance. Effervescent formulations are especially beneficial for herbal drugs because they mask unpleasant taste and improve absorption of active constituents.

The present study aims to formulate and evaluate effervescent tablets containing Murraya koenigii extract for the management of gas and bloating. The formulation was prepared using suitable excipients such as citric acid, tartaric acid, and sodium bicarbonate to achieve rapid

effervescence and acceptable tablet properties. The prepared tablets were evaluated for pre-compression and post-compression parameters including hardness, friability, weight variation, effervescence time, and drug content uniformity. The study intends to develop an effective herbal effervescent tablet that provides quick relief from gastric discomfort with improved patient acceptability and therapeutic efficacy.

Plant profile

Scientific Classification

- **Scientific Name:** *Murraya koenigii*
- **Common Name:** Curry Leaves, Curry Leaf Tree
- **Family:** Rutaceae

Fig. Murraya Koenigii Plant.

- **Kingdom:** Plantae
- **Order:** Sapindales
- **Genus:** Murraya
- **Species:** koenigii

Synonyms

- Bergera koenigii
- Curry Patta (Hindi)
- Kadipatta (Marathi)

Geographical Distribution

Murraya koenigii is native to India and is widely distributed in tropical and subtropical regions of Asia including Sri Lanka, Nepal, Bangladesh, and Southeast Asian countries. It is

commonly cultivated in home gardens and agricultural fields due to its culinary and medicinal importance.

Chemical Constituents

The plant contains several bioactive compounds responsible for its medicinal activities:

- Alkaloids (Mahanimbine, Koenimbine, Girinimbine)
- Flavonoids
- Glycosides
- Tannins
- Carbazole alkaloids
- Essential oils
- Vitamins A, B, C, and E
- Calcium, iron, and phosphorus

Medicinal Uses

Murraya koenigii possesses various pharmacological activities

- Carminative
- Antioxidant
- Anti-inflammatory
- Antimicrobial
- Antidiabetic
- Antidiarrheal
- Gastroprotective
- Hepatoprotective

Traditionally, curry leaves are used for:

- Indigestion
- Gas and bloating
- Nausea and vomiting
- Diarrhea
- Loss of appetite

Uses in Formulation

Due to its digestive and carminative properties, *Murraya koenigii* is considered a suitable herbal ingredient for the preparation of effervescent tablets intended for relief from gastric

discomfort, flatulence, and bloating. Its pleasant aroma and therapeutic benefits improve patient acceptability and effectiveness of herbal formulations.

Mechanism Of action of Murraya koenigii Effervescent Tablet

Effervescent Tablet of Murraya koenigii

↓

Tablet added into water

↓

Reaction of Citric acid + Tartaric acid with Sodium bicarbonate

↓

Release of Carbon dioxide (CO_2)

↓

Rapid effervescence and complete dissolution

↓

Fast release of Murraya koenigii active constituents

↓

Improved absorption and rapid onset of action

↓

Carminative and digestive activity

↓

• Stimulates digestive enzymes

• Reduces intestinal gas formation

• Promotes expulsion of trapped gas

• Relaxes gastrointestinal muscles

↓

Reduction in gas, bloating and abdominal discomfort

↓

Provides quick relief and improves digestive wellness.

Limitation of effervescent tablet of murraya koenigii

1. Moisture sensitivity

Effervescent tablets are highly sensitive to moisture and humidity, which may cause premature effervescence and reduce tablet stability.

2. Special Packaging Requirement

The formulation requires airtight and moisture-resistant packaging, increasing the overall production cost.

3. Shorter Stability Period

Herbal constituents present in Murraya koenigii may undergo degradation over time, affecting potency and shelf life.

METHOD OF PREPARATION

1. Collection and Preparation of Powder

- Fresh leaves of Murraya koenigii were collected, washed, and shade-dried.
- Dried leaves were powdered using a grinder.
- The powder was passed through sieve no. 60 to obtain uniform particle size.

2. Drying of Ingredients

- All hygroscopic ingredients (citric acid, tartaric acid, sodium bicarbonate) were dried separately at 40–50°C.
- Final moisture content was reduced to ensure stability.

3. Sifting and Blending

- All powders were accurately weighed as per formulation.
- The ingredients were passed through sieve no. 60.
- The following were blended uniformly:
  - *Murraya koenigii* leaf powder
  - Sodium bicarbonate
  - Citric acid
  - Tartaric acid
  - Mannitol

4. Addition of Excipients

- Sweetener and flavor were added and mixed thoroughly.
- Binder (PVP K30) was added in dry form for uniform binding.

5. Lubrication

- Magnesium stearate was added at the final stage.
- Mixed gently to avoid over-lubrication.

6. Compression

- The final blend was compressed using a single punch tablet machine.
- Compression was carried out at controlled humidity (<30% RH).
- Tablets were prepared of uniform weight and size.

7. Packaging

- Tablets were immediately packed in airtight aluminum blister packs or moisture-proof containers.
- Silica gel sachets were added to prevent moisture absorption.

FORMULATION TABLE OF EFFERNSCENT TABLET OF MURRAYA KOENIGII

Ingredient	F1 (g)	F2 (g)	F3 (g)	Role
Murraya koenigii leaf powder	6.0	6.0	6.0	Active ingredient (carminative, anti-gas, anti-bloating)
Sodium bicarbonate	6.0	6.4	6.8	Effervescent base (CO_2 source)
Citric acid	4.0	3.8	3.6	Acid source (effervescence reaction)
Tartaric acid	4.0	3.8	3.6	Acid source (controls effervescence rate)
Mannitol	1.6	1.4	1.2	Diluent, sweetness, improves mouth feel
PVP K30	0.2	0.3	0.2	Binder (tablet integrity)
Aspartame	0.1	0.1	0.1	Sweetener
Orange flavor	q.s.	q.s.	q.s.	Flavoring agent (taste masking)
Magnesium stearate	0.1	0.1	0.1	Lubricant

EVALUATION RESULTS (ACTUAL READINGS)

1. Pre-compression Parameters

Parameter	F1	F2	F3	Ideal Range
Angle of Repose (°)	**32.5**	**30.8**	**29.6**	**25–35**
Bulk Density (g/cm³)	**0.52**	**0.54**	**0.56**	**—**
Tapped Density (g/cm³)	**0.63**	**0.65**	**0.67**	**—**
Carr's Index (%)	**17.46**	**16.92**	**16.41**	**< 20**
Hausner Ratio	**1.21**	**1.20**	**1.19**	**1.0–1.25**

2. Post-compression Parameters

Physical Evaluation

Parameter	F1	F2	F3	Ideal Range
Weight variation (mg)	**500 ± 3.2**	**500 ± 2.8**	**500 ± 3.0**	**±5%**
Hardness (kg/cm²)	**3.2**	**3.8**	**3.4**	**3–5**
Friability (%)	**0.78**	**0.62**	**0.71**	**< 1%**
Thickness (mm)	**4.8**	**4.9**	**4.7**	**Uniform**

3. Effervescence / Disintegration Study

Parameter	F1	F2	F3	Ideal
Effervescence Time	5 MIN	5 MIN	6 MIN	5MIN
Disintegration Time	5 MIN	6 MIN	5 MIN	6MIN
CO_2 Release	Moderate	Good	High	High

4. pH of Solution After Dissolution

Batch	pH
F1	6.4
F2	6.7
F3	6.2
Ideal Range	5.5 – 7.0

CONCLUSION

The present research work on the formulation and evaluation of effervescent tablets of Murraya koenigii for the management of gas and bloating was successfully carried out. The study demonstrated that the powdered leaf form of Murraya koenigii, rich in bioactive constituents, can be effectively incorporated into an effervescent tablet dosage form to enhance its therapeutic usefulness and patient acceptability.

The prepared formulations showed satisfactory physicochemical properties including acceptable hardness, low friability, uniform weight variation, and good flow characteristics of the powder blend. Among the three formulated batches, the optimized batch exhibited the best balance of effervescence time, disintegration, and drug content uniformity. The effervescent system provided rapid CO_2 release, leading to quick dissolution and faster onset of action. The effervescent tablets effectively combine the carminative and digestive properties of Murraya koenigii with the advantages of effervescent drug delivery, such as improved palatability, faster absorption, and better patient compliance. The formulation is particularly beneficial for the rapid relief of gastrointestinal discomfort, including gas formation, flatulence, and bloating.

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course of this research work. Their expert advice played a crucial role in the successful completion of this study.

RESULT

It can be concluded that effervescent tablets of Murraya koenigii were successfully formulated and evaluated, and the optimized formulation (F2) showed the best overall performance and is suitable for further development as a herbal anti-gas and anti-bloating dosage form.

REFERENCES

1. Extraction of essential oil from Murraya koenigii leaves: potential study for application as natural -based insect repellent Jamil R., Nor Natashah Nasir, Hafizah Ramli, Isha R, Nur Aminatulmimi Ismail ARPN Journal of Engineering and Applied Sciences, February 2016; 11(4): page no -1.
2. Curry leaf (Murraya koenigii): A Wonder Spice with Medicinal Value Lata Nigam Journal of Advancement in pharmacognosy 2023; 4(I): page no: -2.
3. Curry Leaves (Murraya Koengii Linn. Sprengal)-A Mircale Plant Suman singh, P.k. Omre and Sandhya Madan Mohan Indian J.Sci. Res., 2014; 4(1): 46-52, page no: -1.
4. Pharmacological properties of Murraya koenigii -A Review Madu Bharathi, Kandasamy Arun Gandhi, D. Sunmathi, Nivetha. K June 2019.
5. A Comprehensive Review on the morphology, chemistry, and multifaceted application of curry leaves Jagmohan Meher, M. Geethu, G. kalusuraman, Maheswari R. S, Nair, Ramswaroop Saini, J. purushothaman African Journal of Biological Sciences Jagamohan Meher/Afr. J. Bio., 2024; Sc.6(14): page no: -5071 to 10. Image: - https://in.images.search.yahoo.com/Wikipedia.
6. Study of extraction kinetics of total polyphenols from curry leaves Sunita s. Patil, Umesh B. Deshannavar, M. Emani, Nima Khalil poor, Abilek Issakhov International Journal of chemical Engineering volume 2021.
7. A Validated, precise TLC-densitometry method for simultaneous qualification of mahanimbine and koenimbine in marketed herbal formulations Nabarun Mukhopadhyay, Rezwan Ahmed, Kajal Mishra, Rujuta Sandbhor, Ram Jee Sharma and Venkata Rao Kaki Mukhopadhyay et al. Future Journal of Pharmaceutical Sciences, 2024; page no: -3.
8. High-Performance Liquid Chromatography Method Development and Validation for Estimation of Mahanimbine in Curry Leaves Kanchan Nikam*, Sachin Bhusari, Pravin

Wakte Ind. J. Pharm. Edu. Res., 2024; 58(1s): s217- s223.page no: -S220 World Journal of Biology Pharmacy and Health Sciences, 2025; 24(01): 353-363 362.

9. Extraction of Phytochemical from Murraya koenigii (L.) Spreng Leaves using Maceration Method Hana Fareeha Azizuddin1, Nur Farzanah Nordin1, Siti Khadijah Saiman1, Saliza Asman1*, Alya Athirah Mohd Idris Scientific Research Journal, 2023; 20(2): page no: -150 to 151.
10. Murraya koenigii (curry leave)- A review on its potential Muthulinggam Nishan, Partiban Subramanian International Journal of Pharm Tech Research CODEN (USA): IJPRIF, ISSN: 0974-4304, 2014-2015; 7(4): 566-572.
11. Pharmacogenetic evaluation of curry leaf (Murraya koenigii) Aju BY, Rajalakshmi R and Mini S Journal of Pharmacognosy and Phytochemistry, 2018; 7(6): 779-784.
12. Phytochemical Analysis of Curry Leaf Extract (Murraya koenigii L.) as a Potential Animal Feed and Medicinal Ingredient Mohammad Anam Al Arif1, Sunaryo Hadi Warsito1, Mirni Lamid1*, Widya Paramita Lokapirnasari1, Aswin Rafif Khairullah2, Siti Rani Ayuti3, Sugito3, Intan Permatasari Hermawan4, Oky Setyo Widodo1,5, Rakhi Gangil6 Pharmacognosy Journal, 2024; 16(2): 471-477.
13. A REVIEW ARTICLE ON CURRY LEAVE (Murraya koenigii) Arti Bochare, Shankar Aher, Dhanashri Jadhav 2023 IJCRT., | January 2023; 11(1): ISSN: 2320-2882 www.google.com
14. Floral composition and taxonomy of mangroves of Andaman and Nicobar Islands. Singh S, More PK, Mohan SM. Indian Journal of Scientific Research, 2014; 43(6): 1037– 1050.
15. The potential of chitosan-based film with curry leaf essential oil as natural insect-repellent food packaging, Food Packaging and Shelf Life, R. N. F. Nazurah, M. A. Noranizan, M. A. R. Nor-Khaizura, and Z. A. Nur Hanani, 2022; 34: 100993.
16. Curry Leaf, Elsevier eBooks, pp. 179–190, Jan. 2020; S. Batool, R.A. Khera, M. Asif Hanif, M. Adnan Ayub, and S. Memon, 2020.
17. White light emitting diode and anti-counterfeiting applications of microwave assisted synthesized green fluorescent carbon dots derived from waste curry leaves, Results in Optics, M. Maruthupandi, P. Varatharajan, S. Banu, M. H. Mamat, and N. Vasimalai, 2022; 8: 100249–100249.
18. Optimization of polyphenols extraction from dried chokeberry using maceration as traditional technique, Food Chemistry, N. Ćujić, K. Šavikin, T. Janković, D. Pljevljakušić, G. Zdunić, and S. Ibrić., 2016; 194: 135–142.

19. The effects of different extraction conditions on the polyphenol, flavonoids components and antioxidant activity of Polyscias fruticosa roots, IOP Conference Series: Materials Science and Engineering, N. Q. Nguyen, 2020736, p. 022067.
20. Polyphenols: Extraction methods, antioxidative action, bioavailability and anticarcinogenic Effects, Molecules, E. Brglez Mojzer, M. Knez Hrnčič, M. Škerget, Ž. Knez, and U. Bren, 2016; 21(7): 901.
21. Extraction process optimization of Murraya koenigii leaf extracts and antioxidant properties, Journal of Food Science and Technology, . V. Sablania, S. J. D. Bosco, and M. Bashir, 2019; 56(12): 5500– 5508.
22. "Top 5 Factors That Can Influence Botanical Extraction Yield," Retrieved from www.customprocessingservices. com. J. Klinger, (21 Apr 2021).
23. Phytochemical analysis of curry leaves. International Journal of Science and Research (IJSR), R. Rajvanshi, K. Mittal, 2019; 8(9): 366-367.
24. Mahanimbine isolated from Murraya koenigii inhibits P-glycoprotein involved in lung cancer chemoresistance, Bioorganic Chemistry, P. Mondal, J. Natesh, A. Ajees, and S. M. Meeran, 2022; 129: 106170.