



African Journal of Biological Sciences



Formulation and Evaluation of Oral Medicated Jellies of *Psidium Guajava* Lin leaves

Bharatbhusan Sahu 1, Tikeswar Jal 2, Tapas Kumar Mohapatra 3, Sanghamitra Satapathy 4, Jyoti Kanchan Sahoo5

1 Assistant Professor, Centurion University of Technology and Management, Odisha, 765002

2 Assistant Professor, Gayatri College of Pharmacy Sambalpur, Odisha, 768200

3 Assistant Professor, Gayatri College of Pharmacy Sambalpur, Odisha, 768200

4 Lecturer, Centurion University of Technology and Management, Odisha, 765002

5 Assistant Professor, Florence College of Pharmacy, Irba, Ranchi, 835219

Corresponding Author: - Bharatbhusan Sahu

Address: - Centurion University of Technology and Management, Odisha

Mail id:-sahubharat378@gmail.com

ABSTRACT:

The guava leaves are obtained from the plant *Psidium guajava* L belongs in to family *Mrytaceae*. Guava leaves have long been used effectively due to their antimicrobial, antibacterial and antiulcer properties. There are several type of jellies are available to treat ulcers like medicated jellies, lubricant jellies, miscellaneous jellies. The aim for this research is prepared a oral medicated jellies with the help of guava leaves for the treatment of peptic ulcer. The oral route of administration is the most convenient and acceptable route for the patient compliance and acceptance.

KEY POINTS; Medicated jellies, guava leaves, peptic ulcer, anti ulcer property

INTRODUCTION:

Patients typically feel at ease using oral medication administration systems. Additionally, patient compliance may be improved by the oral drug delivery system's efficacy, safety, and effectiveness (1). The guava leaves in this study have a number of qualities, including antimicrobial, antibacterial, actions that are spasmolytic, analgesic, and antiulcer. Due to antiulcer property of guava leaves are use in preparation of oral medicated jellies. The main advantage of oral medicated jellies is it can administer easily and use the jellies anytime, anywhere as it is easy to handle and does not require water. (2)

Article History

Volume 6, Issue 5, 2024

Received: 22 May 2024

Accepted: 03 Jun 2024

doi: 10.48047/AFJBS.6.5.2024.11310-11317

Types of jellies**1. Medicated jellies:**

Medicinal jelly their spermicidal, local anesthetic, and antiseptic qualities are the main reasons they are applied to skin and mucous membranes. Enough water is available.

Within these jellies. Jelly retains any residual protective layer and provides a localized cooling effect once the water has evaporated. (1)

2. Lubricating jellies:

Medical devices used in diagnostic procedures, such as surgical gloves, cystoscopes, catheters, and rectal thermometers, are lubricated with these jelly-like substances. To be used as lubricants to introduce things into sterile bodily cavities, such as the pee bladder, layer jellies must be sterile. (3)

3. Miscellaneous jelly

These are meant to be used for several purposes, such as patch testing and electrocardiography. (1)

Advantages of oral medicated jellies

1. The treatment is easily halted at any moment if necessary.
2. You don't need water to take your prescription.
3. Trustworthy, easy to use, and convenient administration
4. Boost the adherence of patients.
5. It is beneficial for those who have dysphasia.
6. Avoid first pass metabolism or increase bioavailability.
7. Pediatricians highly recommend it.
8. Well accepted by elderly and geriatric patients
9. It can be taken without water at any time or location. (2)

Objectives

1. Children voluntarily eat jelly candies because they enjoy the flavor and the fact that fruit juice and extract are used to flavor them, which leads to the development of jelly candies.
2. To develop a dosage form suitable for those suffering from dysphasia.
3. To improve the safety, efficacy, and bioavailability of the medication.
4. Creating dose forms that comply with patients is a better option than using conventional ones. (1)

Various component of medicated jellies formulation

I. Gelling Agent: These hydrocolloids create matrices that resemble gel. It disintegrates in liquid phase and creates an internally cohesive structure that is weak. Illustrations of gelling agents:

a) **Sodium Alginate:** Brown algae's cell walls are the source of alginate. Alginates create thick gum when they bind with water. It is a component of several topical and oral medicinal preparations. It is typically employed in a variety of topical formulations, including pastes, creams, and gels, as a thickening and suspending agent. (4)

b) It is a hetero polysaccharide derived from terrestrial plant cell walls. It is used to treat

diarrhea and constipation by making stools more viscous and volumetric.

Owing to its lower cost, it is utilized in a variety of drug delivery techniques, including muco adhesive, controlled release, gastro retentive, and colon- specific drug administration systems. utilized as stabilizers in cosmetics as well.

c) Tragacanth • Tragacanth gum functions as an emulsifier and suspending agent in a range of medicinal formulations, including gels, creams, and emulsions.

Additionally utilized in foods and medications as an additive, thickener, and stabilizer. (5)

d) Gelatin • In pharmaceutical preparation, vitamin capsules, cosmetic technologies, and photographic emulsions, gelatin is typically utilized as a gelling agent.

utilized to administer medications suspended in biodegradable matrices in implanted delivery systems as well.(6)

METHOD AND MATERIALS:

Material:

Formulation of oral medicated jellies, the Guava leaves are received from local market in Rayagada. Gelatin as gelling agent and other excipients like Sucrose, dextrose, citric acid as pH modifier and preservatives like methyl paraben and propyl paraben received from Centurion University of Technology and Management, Rayagada, Odisha.

Method:

1. Extraction of Guava leaves with the help of Soxhlet apparatus.
2. Preparation of oral medicated jellies with the help of Guava extract, gelling agent, preservatives, pH modifier and excipients. The oral medicated jellies prepared with heating and congealing method. Then evaluate the jellies with their evaluation test.(7)(8)



Psidium guajava



Fig no 2- Soxhlet Extraction Fig no 3- Water Bath evaporation of Extract

Formulation table:

Ingredients	F1	F2	F3	F4	F5
Drug	0.04gm	0.04gm	0.04gm	0.04gm	0.04gm
Gelatin	2gm	2.50gm	3 gm	3.50gm	5gm
Citric acid	0.3gm	0.3gm	0.3gm	0.3gm	0.3gm
Methyl paraben	0.05gm	0.05gm	0.05gm	0.05gm	0.05gm
Propyl paraben	0.03gm	0.03gm	0.03gm	0.03gm	0.03gm
Dextrose	0.5gm	0.5gm	0.5gm	0.5gm	0.5gm
Sucrose	10gm	12.50gm	13.34gm	14gm	15gm
Water	5.73ml	6ml	5.48 ml	5.73 ml	6 ml

Preparation of oral jellies

- weight the ingredient
- in beaker mix sucrose with required amount of water and maintain temperature 80 degree
- gelling agent add in that solution with continuous stirring
- After mixing the gelling agent the ph modifier and preservatives must be added
- then add required amount of main ingredient and mix before the gellies are going to set
- finally transfer the formulation in the mold.(9)(10)

Evaluation table

1. Physical evaluation

Evaluation parameters	F1	F2	F3	F4	F5
Color	Light yellow	Light yellow	Light yellow	Light yellow	Yellow
Odour	Odourless	Odourless	Odourless	Odourless	Odourless
Taste	Aromatic	Aromatic	Aromatic	Aromatic	Aromatic
PH	3.3	3.4	3.3	3.2	3.4
Appearance	Transparent	Transparent	Acceptable	Acceptable	Acceptable
Consistency	Slightly liquid	Slightly liquid	Thick	Acceptable	Acceptable
Texture	Sticky	Sticky	Non sticky	Non sticky	Non sticky
Weight variation	9.47	9.49	9.78	9.93	9.52
Stickiness	Sticky	Sticky	Non sticky	Non sticky	Non sticky

2. Drug release

Time	F1	F2	F3	F4	F5
5	19.56	22.07	17.03	18.43	21.07
10	33.78	35.16	27.68	37.65	40.16
15	54.89	49.05	40.91	59.05	61.97
20	68.72	70.44	62.56	75.14	79.58
25	84.32	86.56	78.89	89.87	88.63
30	95.73	98.12	93.58	98.52	91.77

3. Sensory evaluation

Parameter	F1	F2	F3	F4	F5
Color	10	9	8.5	10	9
Taste	7.5	8.5	8	9	9
Flavour	8.5	8.5	8.5	9	10
Shape	8.5	9	7.5	9	8.5
consistency	8	8.5	8	10	9

Result:

The oral medicated jellies of guava leaves was prepared and evaluated. The guava leaves extract was prepared in Soxhlet apparatus and the all medicated jellies was prepared in heating and congealing methods.



CONCLUSION:

The development and assessment of oral medicated jelly as a gelling agent at higher, medium, and lower concentrations was the goal of the current investigation. The prepared jelly batches (F1 through F5) were assessed for consistency, pH, and appearance. In this work, gelatin was successfully used to produce jelly that was filled with guava extract. The jellies are used as an alternative to various solid dose forms for oral administration to juvenile and geriatric patients.

REFERENCE:

- [1].RathaurP,RajaW,RamtekePW,JohnSA. Turmeric: The golden spice of life. International Journal of pharmaceutical sciences and research. 2012 Jul 1;3(7):1987
- [2].Karaman M, Firinci F, Cilaker S, UysalP, TugyanK,YilmazO,UzunerN,Karaman O. Anti-inflammatory effects of curcumin in a murine model of chronic asthma. Allergologia et Immunopathologia. 2012 Jul1;40(4):210-4.
- [3]. SingletaryK.Thyme:history,applications, and overview of potential health benefits. Nutrition Today. 2016 Jan 1;51(1):40-9.
- [4]. OkikiPiusA,OluwadunsinO,Benjamin O. Antibacterial activity of ginger (*Zingiberofficinale*) against isolated bacteria from the respiratory tract infections.JournalofBiology,Agriculture and Healthcare. 2015;5(19).
- [5].Rather MA, Dar BA, Sofi SN, Bhat BA, Qurishi MA. *Foeniculum vulgare*: A comprehensive review of its traditional use, phytochemistry, pharmacology, and safety.ArabianJournalofChemistry.2016 Nov 1;9:S1574-83.
- [6].Badgujar SB, Patel VV, Bandivdekar AH. *Foeniculum vulgare* Mill: a review of its botany, phytochemistry, pharmacology, contemporaryapplication, and toxicology. BioMed research international. 2014 Oct;2014.
- [7].Shao J, Yin Z, Wang Y, Yang Y, Tang Q, Zhang M, Jiao J, Liu C, Yang M, Zhen L, Hassouna A. Effects of different doses of Eucalyptus oil from *Eucalyptus globulus* Labill on respiratory tract immunity and immunefunctioninhealthyRats.Frontiers in Pharmacology. 2020 Aug 21;11:1287.
- [8]. Sujana P, Sridhar TM, Josthna P, NaiduCV. Antibacterial activity and phytochemical analysis of *Mentha piperita*L.(Peppermint)—An important multipurpose medicinal plant.
- [9]. Al-SnafiAE.Pharmacologyandtherapeutic potential of *Euphorbia hirta* (Syn: *Euphorbia pilulifera*)-A review. IOSR Journal of Pharmacy. 2017 Mar;7(3):7-20.
- [10]. JavadiI, EmamiS.Theantioxidativeeffect of chamomile,anthocyanosideandtheir combination on bleomycin-induced pulmonary fibrosis in rat. Medical Archives. 2015 Aug; 69(4):229.
- [11].Singh O, Khanam Z, Misra N, Srivastava MK. Chamomile (*Matricaria chamomilla* L.):anoverview.Pharmacognosyreviews. 2011 Jan;5(9):82.

- [12].Salem MY, El-Azab NE, Faruk EM. Modulatory effects of green tea and aloe vera extracts on experimentally-induced lung fibrosis in rats: histological and immunohistochemical study. *Journal of Histology & Histopathology*. 2014;1(1):6.
- [13].CohenMM.Tulsi-Ocimumsanctum:A herb for all reasons. *Journal of Ayurveda and integrative medicine*. 2014 Oct;5(4):251.
- [14].Mousa AM, AlmatroudiA, Alwashmi AS, Al Abdulmonem W, Aljohani AS, AlhumaydhiFA,AlsahliMA,AlrumaihiF, Allemailem KS, Abdellatif AA, Khan A. Thyme oil alleviates Ova-induced bronchial asthma through modulating Th2 cytokines, IgE, TSLP and ROS. *Biomedicine & Pharmacotherapy*. 2021 Aug 1;140:111726.
- [15]. Aryaeian N, Tavakkoli H. Ginger and its effects on inflammatory diseases. *Adv Food Technol Nutr Sci Open J*. 2015;1(4):97-101.
- [16]. Talwar S, Sood S, Kumar J, Chauhan R, Sharma M, Tuli HS. Ayurveda and allopathic therapeutic strategies in coronavirus pandemic treatment 2020. *Current pharmacology reports*. 2020 Dec;6:354-63.