Original Article

Journal of Pharmaceutical and Medicinal Chemistry
Volume 9 Number 2, July – December 2023
DOI: http://dx.doi.org/10.21088/jpmc.2395.6615.9223.2

Preparation & Evaluation of Medicated Embelia Ribes Jellies for Obese Patients

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How to cite this article:
Sai Datri A, Lakshmana Rao A, Mahesh Chandra Narayana N, *et al.*/Preparation & Evaluation of Medicated Embelia Ribes Jellies for Obese Patients/J Pharmaceut Med Chem. 2023;9(2): 61-64.

Abstract

Medicated herbal jellies are more suitable for child & old age patients, which is going to be easy administration & high absorption of drugs. This study aims to prepare such a jelly preparation that effects the LDL level in Obese patients. Due to resistance & side effects of conventional synthetic medication, herbal drug preparations are well-accepted. The Jellies are alternatives for traditional methods like 'Churna' and 'Tablets'. This research is to develop a new dosage form of embelin into jellies and their pharmaceutical standardization. During the study extraction of embelin from *Embeliaribes*, formulation of jellies, processing procedure with extract based herbal formulation, and expansion for analytical standardization including qualitative and quantitative determinations were carried out. The formulation was subjected to physico-chemical as well as in-vitro drug release.

Keywords: Embelin, Obese; Jellies; and extraction.

INTRODUCTION

Jellies[1] are transparent or translucent non greasy semi solids. They can be chewed or simply swallowed with water. A spectrum of dosage forms[2] is available for problems of child & old age patients such as syrups, suspensions, chewable tablets, etc., but they may have disadvantages. Oral jellies as unit dosage forms can offer a better solution. Embelin (2,5-dihydroxy-3-undecyl-1, 4-benzoquinone)[3] is the major bioactive constituent of Embeliaribes (Family: Myrsinaceae)[4] and has a wide spectrum of pharmacological activities including anti-tumor, anti-oxidant, analgesic, anti-fertility, wound healing, anti-convulsant, anti-diabetic, anti-bacterial, anti-inflammatory, and anti-obesity potential. E.ribes commonly known as vidanga, widely distributed throughout India. One of the Ayurvedic formulation, vidangadya churna[5] (powder of vidanga) which containing vidanga as a main ingredient is taken with honey to alleviate the obesity. So, to achieve anti-obese activity for the formulation, embelin is used. To gives an appropriate consistency a base of chia mucilage[6] is used instead of pectin base which is a rich source of

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Received on: 19.07.2023

Accepted on: 01.09.2023

omega 3 acid. Stevia[7] is used as a bio sweetener. The objective of this work is to prepare patient friendly dosage form for obese patients as well as to provide a rational way to administer herbal drugs.

MATERIALS AND METHODS

Collection of Herbs:

Herbs samples were purchased from local Ayurvedic store in Gudiwada, storage conditions were properly maintained with respect to light and temperature. The herbs were recognized and compared with authentic specimen by taxonomist available at the Krishna University Herbarium (KUH). Similarly it was also make sure that every other material including solvents, reagents and chemicals must be of pure analytical grade and acquired with proper documentation of COA's and MSDS forms through local supplier.

Preparation of Extracts:[8]

The fruits of Embelin ribes Burm F. were condensed to a powder of 40# and stored in an amber colored bottle till further use. The powdered drug was extracted by methanol using Maceration for about 24 hrs and the embelin was isolated.

Determination of Melting Point of Embelin:

The electrical melting point apparatus using capillary method measured the melting point of Drug.

Determination of λmax of Embelin:

Embelin solution in methanol was prepared, then the solution was scanned by spectrophotometer from 400-800 nm, and λmax of the drug was determined.

Drug-Excipient Compatibility Studies:

Compatibility study was carried out by recording the sample using Fourier Transform Infra-Red Spectrophotometer (FTIR) in the range of 4000 cm^{-1} to 400 cm^{-1} by Potassium Bromide pellet technique.

Preparation of Calibration Curve for Embelin:

100 mg of Embelin was accurately weighed and is dissolved in methanol and the volume was made up to 100 ml to obtain a stock solution of 1000µg/ml.0.2, 0.4, 0.6, 0.8, 1.0 and 1.21 ml of this stock solution is again diluted with methanol up to 10 ml to obtain a solution with concentrations of 20, 40, 60, 80, 100 and 120 µg/ml. The resulting solution is scanned at 294.3 nm in a double beam UV-Visible spectrophotometer.

Preparation of Embelin Medicated Jellies:

The jellies were formulated by long heating technique. Jelly base was prepared by finely chopped guava fruits and kept for boiling for extraction until a pasty consistency was achieved. Chia seeds were added which further thickened the formulation due tomucilage formation. This content was transferred to a beaker with constant and controlled heating, until the mixture became thick enough. After 15 minutes the alcoholice extract of embelia were added at the end of the cooking. Sweetener was added according to the formula and procedure. A part of the preparation was set in refrigerator in lubricated moulds.

Evaluation Parameters:[9-11]

Physical Parameters: The medicated Jellies were examined in terms of clarity, texture and consistency. Texture of Jelliesin terms of stickiness was evaluated by visual inspection of the product and grittiness by mild rubbing the jelly between two fingers.

Syneresis: Gels experience syneresis or deswelling due to the release of liquid, resulting in shrinkage of gels and reduced quality. The formulations showing signs of syneresis were rejected and not considered for further studies.

Moisture Content: By Gravimetric method, one gram sample is weighed and placed in a desiccator at for 24 hrs.

Weight Variation Test: Ten Jellies from each batch were individually weighed in grams on an analytical balance. The average weight and standard deviations are measured.

pH of jelly formulations pH of the sample was measured by Equip tronics pH meter. The pH of the formulation influences the taste and stability of oral jellies. The pH of prepared jellies was measured using a digital pH meter at room temperature (25±5°C). For this purpose, 0.5 g of jelly was dispersed in 50 ml of distilled water to make a 1% solution, and the pH was noted.

Drug Content Uniformity: The content uniformity was tested by measuring weight equivalent to one Jellyand dissolving the powder content in 100 ml volumetric flask containing 50 ml of 6.8 phosphate buffers and standsit for 30 min. The mixture was made up to volume with buffer pH 6.8. The diluted samples absorption was recorded at 294.3 nm.

In-vitro Drug Release: The modified dissolution test apparatus USP type-II (paddle) is used and 250 ml of the dissolution medium phosphate buffer pH 6.8 is placed in the beaker containing the jellies and stirred at 50 rpm. Five ml aliquot samples are withdrawn at 5 min interval and replaced immediately with an equal volume of fresh medium *i.e.,* phosphate buffer pH 6.8. Each aliquot is diluted and analyzed using blank, by UV-Visible spectrophotometer. The amount of drug release is determined from the standard calibration curve of pure drug.

Stability Studies: The optimized formulations were subjected to stability studies at temperature *i.e.* 40ºC/75% RH for a period of one month.

RESULTS AND DISCUSSION

The primary goal of this study was to formulate and evaluate embel in Jellies for patients suffering from Obesity. Embelin initially was tested for the melting point and FT-IR as an identification tests. The melting point of embelin sample was found to be 142.00 ± 1°C which is as per the specifications mentioned in IP and FT-IR plot is shown in Fig. 1. Absorption maxima for embelin when observed under UV–visible spectrophotometer were found to be at 294.3 nm. This was observed from the peak in Fig. 2. Calibration curve of embelin was obtained at concentration of 20-120 µg/ml with R2 value=0.999.

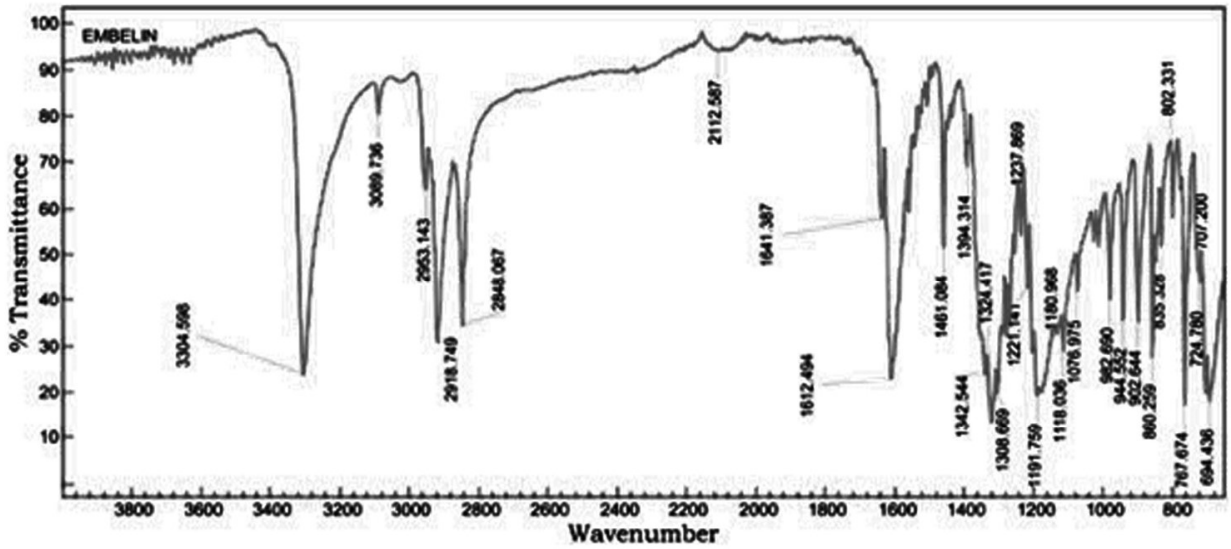

Fig. 1: FT-IR spectrum of Embelin

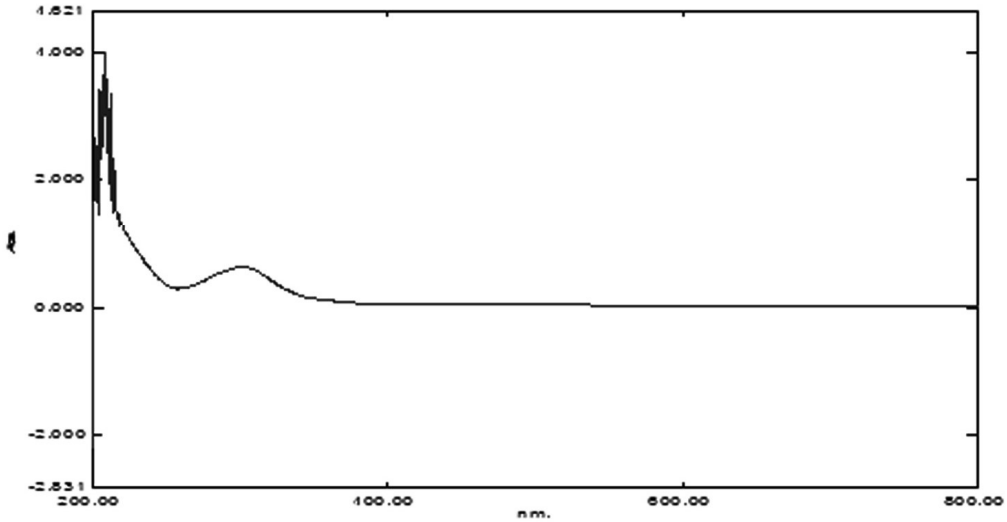

Fig. 2: UV spectrum of Embelin in Methanol

Fig. 3: Photographs of prepared Jellies

The jellies were formulated according to the procedure and were observed to be stable between 4 degree c. and room temperature. No microbial growth was observed for the formulation. The physiochemical studies suggested acidic pH of the formulations with total solids of about 54% for jellies. They showed slight syneresis at elevated temperature. The sensory analysis indicated that most of the subjects found the formulation to be very good in taste and appearance, hence indicating better patient compliance.

CONCLUSION

The physical and chemical compatibility study showed that the drug and excipients are physically compatible with each other. In the present study, the jellies loaded with embelin were successfully formulated using guava fruits, and chia seeds as gelling agents. The optimized formulations showed acceptable physico-chemical properties and stability. The stability studies were performed and there was no change in drug content, and weight variation. Hence the optimized formulation pass all the parameters and were found to be more effective in the treatment of Obese. Hence this formulation can be recommended for patients.

ACKNOWLEDGEMENT

The authors are grateful to V.V. Institute of Pharmaceutical Science, Gudlavalleru for providing the necessary facilities to carry out the research work.

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