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Formulation and Development of Multinutritional Troche

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Abstract

Purpose: To develop and evaluate a model lozenge from *Moringa oleifera* leaf extract.
Methods: Lozenge from *M. oleifera* leaf extract was developed and formulated using wet granulation technique. Lozenges were evaluated for physicochemical properties such as thickness, hardness and weight variation.
Results: The appropriate lozenge formulation containing *M. oleifera* leaf extract powder, magnesium stearate, lactose, acacia and vanillin showed a good physicochemical properties which all the criteria value were in the acceptable range. Moreover, the microbial testing showed no contamination of any microorganisms in proper formulations.
Conclusion: The results indicated the development of a suitable lozenge formulation from *M. oleifera* leave extract which should be further study and apply to the other herbal formulations in the future.

KEYWORDS: *Moringa oleifera*, lozenge, herbal formulation

Introduction :

In India today, herbal lozenge formulations are frequently used. One of the solid dose forms of medicine that dissolves in the mouth or pharynx is the lozenge. This kind of formulation has a number of benefits over other dosage forms, especially in terms of patient compliance for treating sore throat, localised itchiness, mouth or pharynx infections, and systemic drug absorption. If the lozenge formulation dissolves easily in the tongue, it can be utilised efficiently.

Although the idea isn't new to us, the COVID- 19 epidemic has enhanced the use of vitamin supplements. They might prop in boosting our natural defences and precluding the coronavirus.The essential structure blocks of the body, vitamins, aid in maintaining good health. Some people suppose that taking multivitamin capsules will help make up for bad eating habits and maybe lower your

threat of developing habitual ails. The different vitamins and minerals that can be attained in food sources are combined in multivitamins. By taking a diurnal multivitamin, we may make up for any nutritive faults and naturally ameliorate our health.

The multivitamin capsule contains vitamin C, vitamin E, and vitamin D- know for strengthening the vulnerable system. Vitamin C and vitamin E are antioxidants that help to reduce mislike symptoms. Vitamins B1, B2, B6, K1, Niacin, and magnesium all play a part in cardiovascular health. Free revolutionaries in the body are dangerous as they're substantially responsible for muscle ageing-related problems. These free revolutionaries can be destroyed by antioxidants, which are present in multivitamin tablets. results suggested that taking a multivitamin daily can reduce the threat of getting all types of cancer. The vitamins and minerals in the multivitamin capsule can significantly reduce stress and depression symptoms. Vitamin B stimulates the nervous system to produce stress hormones to reduce stress.[1]

Moringa oleifera Lam(Marum) is one of the most extensively cultivated shops in the Moringaceae family which can be used as vegetable and medicinal shops. also,M. oleifera leave could serve as the nutritive source of some vitamins and minerals similar as calcium[3]. This factory has been used as a traditional drug in numerous countries including India to treat some symptoms similar as skin infections, asthma, bronchitis, cough and sorethroat[4- 6]. Phytochemical ingredients of this factory have been reported to have numerous pharmacological conditioning similar as antioxidant, hypotensive, spasmolytic, antifungal, anticancer, hypocholesterolemic and antimicrobial conditioning[7-19]. The leaves are one of the most popular comestible corridor of this factory and contain large quantities of the natural antioxidant, quercetin[20]. Common expression from the leave of this factory commercially showed in the lozenge form of capsule, tea bag and gelcap. therefore, the present study attempt to develop capsule expression fromM. oleifera splint excerpt to be a new choice of the expression from herbal medicinal factory.

Advantages

- Straightning body's immune system against disease causing
- Help to detoxification
- Slow down ageing
- Fulfilling body's nutritional requirements
- Speeds up healing
- Managing body's weight, digestion, blood pressure and cholesterol
- Fight against autoimmune disease

Plan of work

The plan of work adopted was

- Literature review
- Selection of crude drug
- Standardization of crude powder by determining proximate value
- Preparation of herb extract
- Determination of extractive value
  - Water soluble extractive value
  - Alcohol soluble extractive value
- Physiochemical investigation
  - Extraction
  - Determination of extractive yield
- Pharmaceutical formulation development
- Characterization of formulation
- Result and discussion
- Conclusion
- Submission

Ingredients and Their Roles

Ingredients	Roles
Moringa Oleifera	Drug
Lactose	Filler
Acacia	binder
Magnesium Stearate	lubricant
Vanillin Powder	Flavouring agent

Table.1 Ingredients and their roles

Materials and Methods

Materials –

The moringa oleifera leaves was collected from Abhona, Kalwan (Maharashtra). The excipients was collected from college laboratory.

Determination of extractive value –

- 5gm of Moringa Oleifera powder was taken in iodine flask.
- Then 25ml of water and ethanol added in each iodine flask
- Then after 48 hrs. it was filtered and evaporated on hot plate at 40°C.
- Then calculated % yield of extractive value[15].

Extraction of Moringa Oleifera Powder –

- Moringa Oleifera leaves were washed by distilled water.
- The leaves dried at room temperature.
- Then ground to a fine powder and passes through a 66-mesh sieve according to the method
- 50gm powdered sample was extracted with sufficient amount of ethanol at room tempreture by Soxhlet extraction method.
- The mixture filtered through a whatman No.2 filter paper for removal of peel and rhizome particles.
- The extract was filtered and evaporated to dryness on hot plate at 40°C.

Fig.1

Fig.2

Fig.3

Fig.4

Preparation of Multinutritional Troche –

- The wet granulation technique was adopted to use in this study [14].
- All dried excipients including the leaf extract powder, mannitol, menthol, vanillin were ground and mixed in a mortar pestle.
- The resulting wet mass containing with *M. oleifera* extract was passed through a No. 14 sieve and the wet granule were received and dried at 50°C for 2 hours.
- The dried granules were then pass through a No.18 sieve to make into powder.
- The lubricant, magnesium stearate was then added and the powder was compressed into tablet form by a single-punch tableting machine.

Fig.5

Fig.6

Physicochemical characteristics of formulated Multinutritional Troche –

Weight variation:

After compressing, 20 tablets of *M. oleifera* lozenge were weighed individually using analytical balance, the average weight was calculated and the percent relative standard deviation was determined. The test was performed according to the official method from pharmacopoeia guideline.

Hardness:

Hardness of 20 lozenge tablets was determined individually, using a hardness tester, which should not less than four kilopond (kp).

Preliminary stability testing of *M. oleifera* lozenge:

The model product was packed in white plastic box and was stored in two-storage condition, 8±2 ^{O}C in refrigerator and 27±2^{O}C in normal room. The storage conditions were modified to use in this study as preliminary stability testing, because the study focused on the development of model *M. oleifera* lozenge formulation for short time storage and general temperature storage condition. After the storage time reached 1 and 2 month, 20 lozenge tablets was then analyzed for quercetin content in three replications.

Results –

Preparation of Multinutritional Troche from *M. oleifera* leaf extract:

formulation of lozenges from *M. oleifera* leaf extract were prepared. The compositions of these model lozenges were shown in Table 1. These formulations were prior chose from varying some ingredients such as lactose, sorbitol and mannitol, which lactose could give the suitable property of lozenge for better quality including hardness, friability and weight variation. Formulation, F1 prepared with mixing with flavoring agent to improve the compliance.

Sr.No.	Ingredients	Content in formulation (mg) F1
1	Moringa Powder	325
2	Lactose	80
3	Acacia	89
4	Magnesium Stearate	64
5	Vanillin Powder	2
	Total mg	550

Table.2 Composition of Moringa Oleifera Lozenges

Physicochemical characteristics of formulated *M. oleifera* lozenge:

Model lozenges were evaluated for their physicochemical property including weight variation of mass, hardness which were shown in Table 2.

Physiochemical characteristic	Formulation code F1
Weight variation of mass (mg)	553 (±3.01)
Hardness (kp)	9.36 (±1.36)

Table.3 Physicochemical Characteristic of two-model lozenges form *M. oleifera* leaf extract

From the evaluation parameters, it was observed that the weight of these model lozenges complied with the desired specification within limits of ± 5%. Hardness of two formulations was more than 4 kp.

Preliminary stability studies of two model lozenges from *M. oleifera* leave extract:

The stability of prepared formulation (F1) was determined at two different temperatures after storage for 15 days. The stability of moringa oleifera lozenge was higher in refrigerator than room tempreture in both conditions.

DISCUSSION:

Lozenge phrasings containing M.oleifera splint excerpt were proposed and developed in this study. Grounded upon the physicochemical characteristic, expression was respectable for the general demand of asked specification for weight variation of mass, hardness, frangibility which this study used as the marker. The results demonstrated that none of these capsule phrasings defiled with these microorganisms. The fresh seasoning agent, vanillin gave a better acceptance.

For the preliminary stability studies of lozenges, it was found suitable storage condition in cool environment, which this study kept in the refrigerator, 8±2 ºC. The stability of these lozenges should be better if some antioxidants or preservatives were added into the formulation. However, these lozenge formulations could be used and were performed as the model for the further study.

CONCLUSION:

From the results of this study, it can be concluded that Moringa oleifera leaf powder has antimicrobial activity which is also retained upon being granulated and compressed into lozenges. This conclusion is in agreement with findings of previous researchers who demonstrated that granules of Moringa oleifera leaf powder possessed good micromeritic properties for tablet, capsule or lozenge development. It is important to note that it is on the basis of their findings and recommendations that this study was done [16].

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