

FORMULATION AND EVALUATION OF ANTACID TABLET USING HERBAL DRUGS

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ABSTRACT

Herbal antacids are one of the major classes of over the counter drugs used by patient considering its safety. However, there are many herbal formulations in ayurvedic practice used for treatment of acidity.

The objective of present study was to formulate and evaluate the antacid tablets by using different combinations of herbal drugs. Material and method: The herbal antacid tablet containing lactose and mannitol as diluent and containing natural drugs like Ginger, Myrobalan, fennel, Liquorice, which was prepared by direct compression method. The compressed formulations were subject to several evaluation parameters like appearance, thickness, wet variation, Hardness and friability. Results: The results of all evaluation parameters of herbal antacid tablets show satisfactory results. The thickness, hardness, wet variation and friability of herbal antacid tablet were found to in acceptable range. The significant results were obtained from present study.

Keywords: - Direct compression, Herbal antacids.

II.INTRODUCTION

Herbal medicines, also known as botanical medicines or phytomedicines, uses herbs, herbal materials, herbal preparations, and finished herbal products that contain parts of plants or other plant materials as active ingredients. Herbal remedies are complex chemical combinations prepared from plants that are extensively used in health management in both urbanized and developing countries. World Health

Organization (WHO) estimated about 80% of the world population using herbal and other traditional remedy for their primary health care needs. Herbals are traditionally considered harmless and increasingly being consumed by people without prescription. However, some can cause health problems, some are not effective and some may interact with other drugs.

Acidity is a frequently occurring gastrointestinal disorder that can occur due to diverse reasons which is related to heartburn and gas formation in stomach. In acidity, gastro esophageal reflux disease (Urdhva Gata Amalpitta in Ayurveda) there is a movement of gastric acid from the stomach into the lower esophagus. Gastric acid is a digestive fluid formed in the stomach having a pH of 1 to 2. It is a mixture of hydrochloric acid, large quantities of potassium chloride and sodium chloride. Although there are a number of antacids and anti ulcer drugs, most of these have

limitations, side effects and drug interactions. Herbal antacids are one of the major classes of over the counter drugs used by patient considering its safety. However, there are many herbal formulations in ayurvedic practice used for treatment of acidity which needs to be standardized. Hence, in present study we attempted to carry out biological standardization of some polyherbal formulations for antacid activity using in vitro methods.

Ginger consist of dried rhizomes of *zingiber officinale* family *zingiberaceae*. It used as carminative, stimulant, flavouring agent. It's colour is buff yellow.

Fennel of the dried ripe fruits of *Foeniculum vungare* Miller., belongs to family *umbelliferae*.

Liquorice consist of the dried roots of *Glycyrrhiza glabra*, belongs of family *leguminoseae*. It show antacid activity & also myrobalan consist of dried fruits of *termelia chebula* belong to family *combretaceae*.

ADVANTAGES OF TABLETS

Some of the potential advantages of tablets are as follows:

1. They are the unit dosage form having greatest capabilities all the oral dosage form for the dose precision and least content variability.
2. Their cost is lowest.

DIRECT COMPRESSION

The modern tablet development usually three basis formulation techniques direct compression, dry compaction and wet granulation. Depending on the API, characteristics and the desired dosage, one of these formulation approaches is used.

Direct compaction represent the simplest and most cost effective tablet manufacturing technique. Direct compression is a process by which tablets are compressed directly from mixtures of the drugs and excipients, without any preliminary treatment. Tablet manufacturing by direct compression has increased steadily over the years. it offers advantages over the other manufacturing process for tablets, such as wet granulation.

• ADVATAGES OF DIRECT COMPRESSED METHOD

- This process is more economical it requires fewer manufacturing steps, less processing time and thus reduces labour cost and less process validation.
- The processing steps required no need of moisture, heat and high compaction pressure.

• DISADVANTAGE OF DIRECT COMPRESSION

Problems in the uniform distribution of low dose drug.

- High dose drugs having high bulk volume, poor compressibility and poor flow ability are not suitable for direct compression . e.g. Aluminum hydroxide, Magnesium hydroxide.
- Capping, lamination, spitting, or layering of tablets is sometimes related to air entrapment during direct compression when air is trapped, the tablet is released, resulting in splits or layers in the tablet

II. MATERIALS AND EQUIPMENTS

Table no1:List of materials

III.EXPERIMENTAL WORK

1. **Procedure:** Fine powder of Ginger, liquorice, Myrobalan and Fennel was passed through the sieve no.40 separately and mix together Lactose &

S.No.	Name of material	Sources
1.	Myrobalan	KTPCOP osmanabd
2.	Liquorice	KTPCOP osmanabd
3.	Ginger	Local area of osmaanbad
4.	Fennel	KTPCOP osmanabd
5.	MCC	KTPCOP osmanabd
6.	Starch	KTPCOP osmanabd
7.	Magnesium stearate	KTPCOP osmanabd
8.	Talc	KTPCOP osmanabd
9.	Lactose	KTPCOP osmanabd

as a diluent and magnesium stearate was added as binder then microcrystalline cellulose & talc was added as a bulking agent and improve flow of powder. Above mixture added to compression machine for direct compression of tablet.

The composition of contents are shown in below table no-2

Table No-2 Composition of Herbal antacid table

Sr.No.	Ingredients	Taken quantity
1.	Myrobalan	50mg
2.	Liquorice	100mg
3.	Ginger	50mg
4.	Fennel	50mg
5.	MCC	5%(25mg)
6.	Starch	10%(50mg)
7.	Magnesium stearate	2%(10mg)
8.	Talc	1%(5mg)
9.	Lactose	q.s(160mg)

2. Evaluation of powders

a) **Bulk density:** Bulk density is used to find out homogeneity. The volume before tapping was used to determine the bulk density.

$$\text{Bulk density} = \frac{\text{Weight of powder}}{\text{volume of powder}}$$

b) **Tapped density :**The volume after tapping was employed to determine the tap density. It is determined by following formula-

$$\text{Tapped density} = \frac{\text{Weight of powder}}{\text{volume of tapped powder}}$$

c) **Angle of repose :**It is maximum angle that can be obtained between the freestanding surface of powder heap and horizontal plane. It was determined by using fixed funnel method. Specified amount of powder drug was transferred to the funnel keeping the orifice of the funnel blocked by thumb. When powder was cleared from funnel then measured its angle of repose.

$$\text{Angle of repose } (\theta) = \tan^{-1}h/r$$

3. **Evaluation of tablet :**These tests include weight variation, hardness and friability.

a) **Weight variation :**Weight variation test is done by weighing 20 tablets individually. The tablets meet the requirements. If NMT 2 of the individual weights deviates by more than twice that percentage.

b) **Hardness:** Although, the crushing strength test is undertaken to determine the ability of the tablets to withstand pressure during the handling, packaging and transportation. A Monsanto tablet hardness tester was employed to determine the mechanical strength of the tablets.

c) **Friability :**To evaluate the degree of friability of the tablets. 10 tablets were randomly selected, dusted and weighed. The tablets were placed in Roche Friabilator and subjected to tumbling actions at 25 rpm per minute for 4 minutes. Afterwards, the tablets were once again dusted and reweighed to determine the percentage loss of weight.

IV.RESULT AND DISCUSSION

The primary objective of this work was to develop combinational oral herbal dosage form of Ginger, Myrobalan, Liquorice, and Fennel. The development of formulation will mark an important advancement in the area of phytopharmaceuticals. Tablets were prepared using magnesium stearate as binder and talc as lubricant. The parameter for assessing the properties of powder's which include bulk and tapped densities, Angle of repose, Hausner's ratio and compressibility index are shown in following table.

Sr.No	Parameter	Standard value	Evaluation Value

1	Bulk density	-	0.53
2	Tapped density	-	0.66
3	Angle of repose	Less than 25-40	26.36 ⁰
4	Hausner's ratio	1.0 – 1.60	1.2
5	Carr's index	Less than 10 - 38	19.7

8. https://en.m.wikipedia.org/wiki/Terminalia_chebula

Table No 3:Evaluation of tablets

- 1. Weight variation :** Individual weight of 20 tablets ranging from 485-510 mg
- 2.Hardness :** Hardness of individual tablet ranging from 3.30-3.50
- 3.Friability :** Tablets exhibit less friable property that is in between 0.5-1

V.CONCLUSION

From the all study, we conclude that the Herbal antacid tablets by using Ginger, myrobalan, liquorice and fennel were prepared by direct compression method and gave satisfactory and acceptable result. The powders had good flow property and satisfactory compressibility which led to tablets with less variation in uniformity. The tablets had good uniformity of weight, thickness and diameter, hard and less friable.

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