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FORMULATION AND EVALUATION OF EFFERVESCENT TABLETS OF *TRIPHALA CHURNA*

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ABSTRACT

The present research work is based on the formulation of effervescent tablets. In the present investigation various standardization parameters such as physicochemical parameters like weight variation test, hardness test, friability, effervescent time, pH were carried out. The advantages of effervescent tablets forms include an opportunity for formulator to improve taste *Triphala churna* & also it is easy to carry & pack. It also gives a desired or calculated dose of medicament. It is concluded that the formulation has been prepared and evaluate by intervention of modern quality control measures.

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INTRODUCTION

Effervescent mixtures have been known and used medicinally for many years. Effervescent powders used as saline cathartics were available in the eighteenth century and were subsequently listed in the official compendia as compound effervescent powders. These were more commonly known as 'Seidlitz powders'. Effervescent mixtures have been moderately popular over the years since along with the medicinal value of the particular preparation. In addition, they provided a pleasant taste due to carbonation which helped to mask the objectionable taste of the drugs. Effervescent tablets acts as an alternative dosage form. The tablet is added into a glass of water just before administration and the drug solution or dispersion is to be drunk immediately. The tablet is quickly broken apart by internal liberation of CO_2 in water due to interaction between tartaric acid and citric acid with alkali metal carbonates or bicarbonates in presence of water [2].

Due to liberation in CO2 gas, the dissolution of API in water as well as taste masking effect is enhanced. The advantages of effervescent tablets compared with other oral dosage forms includes an opportunity for formulator to improve taste, a more gentle action on patient's stomach and marketing aspects. To manufacture these tablets, either wet fusion or heat fusion is adopted

$$\text{A-COOH} + \text{B-HCO}_3 \longrightarrow \text{CO}_2 + \text{H}_2\text{O} + \text{B-A-COO}^-$$

Tablets are compressed soft enough to produce an effervescent reaction that is adequately rapid and Granules are prepared by wet granulation (using alcohol). Water soluble lubricants are used to prevent an insoluble scum formation on water surface [3].

Triphala literally means "three fruits" (tri= three, phala= fruits). It is a mixter composed of the three essential myrobalams. They are:-

1. Amalaki / Amla (*Emblica officinalis)*
2. Bibhitaki / Behra(*Terminalia belerica)*
3. Haritaki /(*Terminalia chebula)*

Triphala Preparation is traditionally prescribed in the form of Churna, a powder of dried fruit of three ingredients(Amla, Bhaera and Harard) the Ayurvedic Formulary of India specified the dose of Triphala to be 5-10 gm per day. Which is very difficult to intake, if the Effervescent tablet were prepared then it is easy to intake the triphala, in the present investigation an attempt is made to Formulate, Prepared and evaluate the effervescent tablet of Triphala for the convenience of the Patient.[1,8]

MATERIAL AND METHOD

Marketed formulation of *Triphala Churana* was taken and then the Effervescent Tablets were prepared.

Method of Preperations of Effervecent Tablets of *Triphala Churan*:-

The effervescent tablet of 750 mg was prepared as follows: The *Triphala churna* (active ingredient) 750 mg, polyvinyl pyrrolidone (PVP) binder 2.5 mg, Talc powder 13 gm, citric acid 40 mg, Ascorbic acid 33 mg, Sodium-bicarbonate 50 mg, Sodium Citrate 35 mg, Polyethylene glycol 6 mg, Sodium starch glycolate 13 mg. All the ingredients triturated in a mortar and pestle to make powder then mixed with calculated amount of the other components. The binder was added and formed into a paste and granulated using mesh 8. Now punch the tablets by Direct Compression Method, and stores the Tablet in the air tight and moisture free container .The physical tests that included hardness test, weight variation, disintegration time/ effervescent time, friability test, content uniformity test and pH were carried out to confirm their conformity with monographs.

RESULTS & DISCUSSION

The effervescent *Triphala churna* tablets were prepared by Direct compression method and in the analytical study it was observed that the tablets are green in colour, saline in taste and with characteristic odour, the pH was 5.8.

The pharmaceutical standardization shows. Hardness 1.5 kg-cm^2 (Table 1), indicates that tablets are not too hard, friability 1.5% (Table 2) which is under the limit, , effervescent time is 75 second , tablets weight variation test shows that all the tablets are under the limit the 37.5 gm/ limit is i.e ±5% (Table 3).

General Appearance

The general appearance of the tablet were examine by visual method

- Shape : - Round
- Size :- 9-10 mm diameter and 2-3mm thickeness
- Colour :- Green colour
- Odour and Taste: - Characteristic odour and Salty taste.

Hardness [16][17]

To determine the need for pressure adjustments on the table ting machine. Hardness can affect the disintegration. So if the tablet is too hard, it may not disintegrate in the required period of time. And if the tablet is too soft, it will not withstand the handling during subsequent processing such as coating or packaging.

Figure 3: Effervescent Tablets of Triphla Churnna.

Table 1: Hardness Results of Effervescent Tablet.

Serial number	Hardness (Force / kg- cm^2)
1	1.0
2	2.0
3	1.5
	Mean :- 1.5

Friability [15]

It is the tendency of tablets to powder, chip, or fragment and this can affect the elegance appearance, consumer acceptance of the tablet, and also add to tablet's weight variation or content uniformity problems.

1. Weigh 10 tablets altogether = W_1
2. Put these tablets in the friabilator and adjust the instrument at 100 rpm (i.e. = 25 rpm for 4 min)
3. Weigh the 10 tablets (only the intact ones) = W_2
4. Friability (% loss) = It must be less than or equal to1%.

Table 2: Friability Results of Effervescent Tablet.

Item	Value
Wt. Of 10 tablets(before)	7.73 gm
Wt. Of 10 tablets (after)	7.62 gm
Wt. Loss by tablets	0.11 gm
% wt loss of 10 tablets	1.5 %

Effervescent Time[18]

It is the time required for the tablet to break into particles, the effervescent time is a measure only of the time required under a given set of conditions for a group of tablets to disintegrate into particles.

Start the effervescent time test on 1 tablet.

Take 120 ml water in a beaker, put tablet in the beaker and then note the time in which the tablet will completely disintegrate. Effervescent time is 75 second

Weight variation [19]

Weigh 20 tablet selected at random, each one individually. X1, X2, X3… Xz

Determine the average weight.

$$X= (X1+X2 +X3+\ldots+ Xz)/20$$

Table 3: Weight Variation Results of Effervescent Tablet.

Tablet	Weight (mg)
1.	790
2.	700
3.	750
4.	760
5.	720
6.	740
7.	780
8.	750
9.	770
10.	760

Average weight = 752 gm, According to IP / BP the Weigh variation Limit for the tablet more than 250 mg is ±5% So 5 % of 750 is ± 37.5 gm

CONCLUSION

In the present investigation various standardization parameters such as physicochemical parameters like weight variation test, Effervescent time, hardness test, pH and friability were carried out.

It is concluded that the prepared formulation (*Triphala churna* Effervescent tablet) has been prepared and evaluate by intervention of modern quality control measures. The prepared samples have been evaluated on the basis of the above mentioned parameter which shows satisfactory results.

These formulations are also full-fill all the objectives:-

- To mask the unpleasant taste of the *Triphala churna*.
- Tablets are easy to carry & pack.
- Tablet can give a desired or calculated dose of medicament.

All these investigations parameter are specified in the standard literature such as in pharmacopoeia, which could helpful in authentication of Effervescent tablet of *Triphala churna*.

ABBREVIATIONS

PVP	-	Polyvinyl pyrrolidone
Rpm	-	Rotation per minute
IP	-	Indian Pharmacopoeia
BP	-	British Pharmacopoeia

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CONFLICT OF INTEREST

The authors do not report any conflict of interest.

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