POLYHERBAL CHEWABLE HERBAL TABLETS FOR COUGH REMEDY: DEVELOPMENT AND EVALUATION

Sumalatha G[1] and Jayapal Reddy G[2]

[1] Department of Pharmacognosy, Vaagdevi college of Pharmacy, Hanamkonda, Telangana, INDIA.
[2]Talla Padmavathi College of Pharmacy, Orus, Kareemabad, Warangal, Andhra Pradesh, India-506002.
*Corresponding Author Email: sumalatha2k@gmail.com

ABSTRACT

The present study aimed at the formulation and evaluation of polyherbal chewable tablets for cough remedy. Plants have always been an exemplary source of drugs and many of the currently available drugs have been derived directly or indirectly from them. Following all data and knowledge chewable tablet for cough remedy was prepared using Liquorice (Glycyrrhiza glabra), Ginger (Zingiber officinale), Black pepper, Tulsi (Ocimum sanctum), Pudina (Mentha piperita), Fennel (Foeniculum vulgare), Cinnamon (Cinnamomum zeylanicum), Clove (Eugenia caryophyllus) Ajowan and Amla with 10% starch as a binding agent. Development of chewable herbal tablets for cough remedy is important to meet better patient compliance. Chewable herbal tablets were prepared by wet granulation technique by using Starch (10%w/v) as a binding agent. Tablets were evaluated for weight variation test, friability, hardness; time required for complete chewing and is found to be in acceptable limits. DSC and FTIR spectral studies showed that there is no interaction between the excipients. In conclusion, development of chewable herbal tablets are protecting from cough. Our data confirm that the selected formulation of chewable herbal tablets has acceptable physicochemical features and may be considered as herbal medication for cough remedy. Further, the efficacy of the developed formulations is compared with standard marketed formulations.

KEY WORDS

Polyherbal, Chewable, Tablets

INTRODUCTION

Herbal medicine is the oldest form of healthcare known to mankind. In India, indigenous remedies have been used in the treatment of cough and cold since the time of Charka and Sushruta (6th century BC). Plants have always been an exemplary source of drugs and many of the currently available drugs have been derived directly or indirectly from them. Amongst, people used to chew tulsi leaves in case of cough, it is a good remedy. Ginger powder is another important constituent in Ayurveda, herbal and unani preparation.[1] Generally a drop of ginger oil or a few slices of fresh rhizome may also be placed in steaming water and inhaled which is best household remedy for cough and cold.[2] Black pepper use widely in all over world as a stimulant, expectorant properties and it is used in cold, fever etc. Following all data and knowledge we have tried a chewable tablet containing all these ingredients in powder from in the varying proportions. The present study aimed at the formulation and evaluation of polyherbal chewable tablets for cough remedy.[3-4]

Experimental Methods

Preparation of chewable tablet

The granules are prepared by wet granulation. It involves weighing all the ingredients, preparing a damp mass by using 10% starch solution, screening the damp mass into granules by passing through sieve no.14, drying of granules and blending and tablet formation by 8 station rotary press tablet compression machine.[5]

Evaluation of granules:

Angle of repose

The angle of repose is a relatively simple technique for estimation of the flow property of a powder. The angle of repose was calculated by using the formula[7]

Angle of repose (θ) = $\tan^{-1}$ height /radius

Carr`s compressibility index

The Carr's compressibility index was calculated by calculating the tapped and bulk density using the 100-ml measuring cylinder. Compressibility is calculated by the formula**,**

$C = 100 \times (1 - \rho B/\rho T)$

A carr`s index greater than 25 is considered to be an indication of poor flowability, and below 15, of good flowability

Particle Size distribution

The particle size distribution of granules was evaluated by sieve analysis using standard sieves in the range of sieve no. 10-36.[8]

Evaluation of tablets

Friability

The test is performed by using Roche friabilator. Initial weight- final weight/initial weight ×100

Hardness

The hardness test is performed to provide a measure of tablet strength. The Pfizer tester is commonly used.

Organoleptic properties

The colour, odour and taste characteristics were evaluated.

Diameter and Thickness

It was measured by using vernier calliper scale.[9]

Weight variation

The USP weight variation test is run by weighing 20 tablets individually and comparing individual weight to the average. The tablets meet the USP test if no more than 2 tablets are outside the percentage limit and if no tablet differs by more than 2 times the percentage limit.[10]

Results and Discussion: Evaluation of granules

The granules thus prepared were evaluated and the results thus obtained are given in Table 1. As granules have the angle of repose (before adding lubricant & after adding lubricant) value less than 27°, show excellent flow. The hausner's ratio value was found to be less than 1.25 which indicates excellent flowability. As value of % compressibility is found to be 16.7%, it indicates good flowability. Average particle size was found to be in the range of 548-665 µm. The drug release from above formulation followed zero order profile and the mechanism of drug release followed non fickian release.

Evaluation of tablets

The tablets thus prepared were evaluated and the results thus obtained are given in Table 2. Organoleptic properties like color, odor and taste were found to be acceptable. Tablets showed % weight variation within given limits (< 5%). Friability was found to be 1.72%. Hardness value was found to be in the range of 5.5 – 6.0 kg/cm^2 Disintegration i.e., Time required for complete chewing ranges from 15-20 min.

Table 1: Evaluation of granule

Parameter	Observation
Angle of Repose	26.5
Bulk density	0.374gm/ml
Tapped density	0.449ga/ml
Carr's index	16.7%
Hausner'ratio	0.83
Type of flow	Excellent

Table 2: Evaluation of tablets

Sr.no	Parameter	Observation
1	Color	Yellowish green
2	Odour	Good
3	Taste	Good
4	Diameter(cm)	0.9mm
5	Thickness(cm)	0.5mm
6	Weight variation test	Tablet complies as per specification
7	Friability Test	1.72%
8	Hardness Test	5.5-6.0kg/cm2
9	Time required for complete chewing	10-15min

Conclusion

The evaluation of granules and tablets indicate successful formulation of chewable tablet. Chewable tablet is with minimum disintegration time, sufficient hardness, pleasant taste and meeting all official limits. Therefore, this can be the formulation for paediatric use in future.

References

1. Kirtikar KR and Basu BD.Indian medicinal plants Vol.III; 2nd ed. International Book Distributors;1999, 2149

2. Rangari VD. Traditional drug of India in Pharmacognosy & Phytochemistry PartII,1st ed. Career Publication; 2008, 251

3. Kokate CK., Purohit.PA, Gokhale SB.42nded. Nirali Prakashan;2008, 11,53

4. Mohammad Ali.Text book of Pharmacognosy 2nded. CBS Publishers; 2006,261

5. Lachman L, Liberman HA and Kanig JL.The Theory and Practice of Industrial pharmacy, 3rd edition, Bombay: Varghese Publishing House, 1987, pp. 329-335.

6. Liberman HA, Lachman L and Schwartz JB.Pharmaceutical Dosage forms: Tablets, second edition, New York: Marcel Dekker Inc., 1989, pp. 367-414

7. Gaud RS, Yeole PG, Yadav AV and Gokhale SB, A Textbook of Pharmaceutics, 9th edition, pune: Nirali Prakashan, 2007, pp. 9.

8. Allen LV, Popovich GN, Ansel HC,Ansel's pharmaceutical dosage forms and drug delivery systems, 8thedition, Lippincott Williams and Wilkins, 2005, pp.240,246.

9. Suzuki H, Onishi H, Takahashi Y, Iwata M and Machida Y.'Development of oral acetaminophen chewable tablets with inhibited bitter taste', International journal of pharmaceutics, 2003;251:123-132

10. USP 29/NF 24, United state pharmacopoeial convention, Toranto, Asian Edition; pp.1236-1240,2670

*Corresponding Author:
Sumalatha G*
Department of Pharmacognosy,
Vaagdevi college of Pharmacy,
Hanamkonda, Telangana, INDIA.