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Formulation and In Vitro Evaluation of Fast Dissolving Tablets for Albendazole

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Abstract

The present work is to study the effect of various superdisintegrants on drug (Albendazole) by direct compression methods. The tablets were prepared by four super disintegrants, e.g; sodium starch glycolate, cross carmellose, cross povidone and L- subsituated hydroxyl propyl cellulose. The blend was examined for angle of repose, bulk density, tapped density, compressibility index, and hausner ratio. The tablets were evaluated for hardness, drug content and friability were found satisfactory. Albendazole is a bitter in taste. To prevent bitter taste of the drug formulated with a sweetener (Aspartame), a mannitol-based diluent. Taste evaluation was done by panel tasting.

Keywords: Formulation; evaluation; super disintegrants

Introduction

Majority drugs are delivered are by oral drug delivery. It offers benefits of ease of administration and considerable manufacturing cost savings. Today drug delivery companies focused on solid oral drug delivery systems with higher patient compliance and efficient dosages. Tablet is the most popular among all dosage forms available now a day due to its ease of self-administration Majority medicines are delivered are by oral medicine delivery. It offers benefits of ease of administration and considerable manufacturing cost savings. moment medicine delivery companies concentrated on solid oral medicine delivery systems with advanced patient compliance and effective tablets. Tablet is the most popular among all lozenge forms available now a day due to its ease of tone administration, conciseness, and ease of manufacture.1

An ideal lozenge authority is the one, which incontinently gives the needed remedial attention of medicine at the point of action and constantly maintains until duration of treatment. This would be possible by administration of conventional lozenge form in a particular cure and at a particular frequence.2

medicines are veritably frequently given orally. Although a veritably less medicine products are taken orally is intended to be dissolved in mouth, utmost of them were taken orally and swallowed. Compared with other routes, oral medicine delivery is the veritably popular and has been used veritably frequently for conventional medicine delivery. It was veritably natural, uncomplicated, accessible, safe means of administering medicines, further flexibile in lozenge form design, ease of product and cost effective.3

2. Literature Review

Yoshio etal.(2008) estimated the effect of lubricants on the characteristics of orally disintegrating(OD) tablets manufactured using the phase transition of sugar alcohol. OD tablets were produced by directly compressing an admixture containing lactose – xylitol grains, disintegrant, glidant and lubricant, and posterior heating. The effect of the type of lubricant on the tablet characteristics was estimated using magnesium stearate (mg- st), sodium stearyl fumarate (SSF), and talc as lubricants. the hardness of the tablets increased toca. 6 kp because of heating, anyhow of the kind of lubricant. the oral decomposition time of the tablets containing mg- st or ssf increased with an increase in the hardness. In discrepancy, the oral decomposition time of the tablets' containing talc wasn't changed despite of an increase in hardness. The water immersion rate of the tablets' containing talc was important faster than that of the tablets containing other lubricants. The water immersion rate of the tablets' containing talc was also increased by heating.

Yoshio etal., (2008) estimated the effect of medication system on the parcels of orally disintegrating (OD) tablets, OD tablets were prepared by compressing a admixture of high melting point sugar alcohol (HMP- SA) and low melting point sugar alcohol (LMP- SA) and posterior heating. In the direct contraction system (DCM) where the LMP- SA was added as a greasepaint, both hardness and decomposition time were increased by dwindling the flyspeck size of the LMP- SA. In the wet scrap contraction system (WGCM), where the LMP- SA was addedas a waterless binder result, the tablets came harder with lower heating compared to tablets prepared by DCM. Using 1 xylitol as the LMP- SA handed tablets with sufficient hardness when prepared by WGCM, as opposed to DCM where 5 xylitol was necessary to prepare tablets with analogous hardness. These results suggest that slightly distributed LMP- SA on the face of HMP- SA patches in WGCM might diffuse more fluently during the heating process compared to mechanically mixed LMP- SA in DCM, performing in an increase in tablet hardness indeed with a short heating time and low content of LMP- SA. In addition, decomposition and hardness stability of the tablets were affected by the LMP- SA content when prepared by WGCM, suggesting that the LMP- SA content should be regulated to assure the stability of OD tablet characteristics.

3. Need for The Study

The FDTs surfaced with an ideal to ameliorate case's compliance. These lozenge forms fleetly disintegrate and/ or dissolve to release the medicine as soon as they come in contact with slaver, therefore preventing the need for water during administration, an trait that makes them largely seductive for pediatric and senior cases. Difficulty in swallowing conventional tablets and capsules is common among all age groups, especially in senior and dysphagic cases.

This complaint of dysphagia is associated with numerous medical conditions including stroke, Parkinson's complaint, AIDS, thyroid ectomy, head and neck radiation remedy and other neurological diseases including cerebral paralysis. One study showed that 26 out of 1576 cases endured difficulty in swallowing tablets due to their large size, followed by their face, shape and taste. Rapid- breakdown or presto disintegrating tablet of the type of those intended to suffer dis-aggregation in the mouth in contact with the slaver in lower than 60

seconds, rather in lower than 40 seconds, forming a suspense which is easy to swallow.

Hence, in the present study an attempt is made to formulate fast disintegrating tablets of Albendazole (A benzimidazole broad-diapason anthelmintic structurally related to mebendazole that's effective against numerous conditions.)

4. Aim and Objective

Fast disintegrating tablets are getting popular as one of the stoner friendly lozenge forms. Our purpose is to develop an original composition of fast disintegrating tablet by using conventional tablet manufacturing process. The introductory approach used in the development of fast disintegrating tablets is the use of super disintegrants. Cross caramelize sodium, sodium bounce glycolate, and cross povidone, low- substituted hydroxyl propyl cellulose was used in the present study.

Before that, bitter taste of albendazole was masked by using sweetener.

4. Medicine Profile

Albendazole

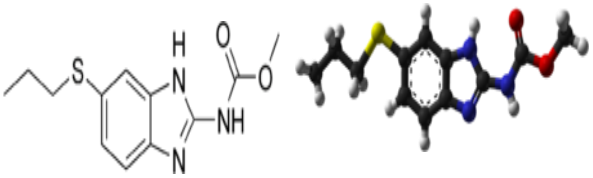
Description

A benzimidazole broad- diapason anti helmintic structurally related to mebendazole that's effective against numerous conditions. (From Martindale, The Extra Pharmacopoeia, 30th ed, p38). Albendazole contains not lower than98.0 percent and not further than102.0 percent calculated on the dried base.

Molecular Formula C12H15N3O2S

Chemical/ IUPAC Name Methyl 5- propylthio- 1H- benzimidazol-2-ylcarbamate.

Chemical Structure:



Molecular weight265.3 g/ operative

Physicochemical Profile

Description White or slightly unheroic greasepaint.

Melting point 250- 251 ºC

Solubility virtually undoable in water, freely answerable in anhydrous formic acid, veritably slightly answerable in methylene chloride, virtually undoable in ethanol (96 per cent). Trade names Albenza, Albendazole is a WHO Essential drug.

Routes Only oral route

Metabolism Oxidation of sulfur snippet tosulfoxide, the active metabolite

partial life About8.5- 12 hr, terminal elimination half- life ranges from 8 to 12 hours (single cure, 400 mg).

CAS number 54965-21-8 orders Anthelmintics, Anticestodal Agents, Antiprotozoal Agents, Tubulin Modulators. Description Albendazole is a benzimidazole medicine used for the treatment of a variety of parasitic worminfestations. Although this use is wide in the United States, theU.S. Food and Drug Administration (FDA) haven't approved albendazole for this suggestion. It's retailed by Amedra Pharmaceuticals.

5. Excipient Profile

1. SODIUM bounce GLYCOLATE

Nonproprietary Names

BP Sodium bounce glycollate

PhEur Carboxymethylamylum natricum

USPNF Sodium bounce glycolate

Antonyms

Carboxymethyl bounce, sodium swab; Explosol; Explotab; Glycolys; Primojel; bounce carboxymethyl ether, sodium swab; Tablo; VivastarP.

Chemical Name and CAS Registry Number

Sodium carboxymethyl bounce (9063-38-1)

Structural Formula

Functional order

Tablet and capsule disintegrant.

7. Results & Discussions

Preparation of standard graph of Albendazole

Standard estimation wind of Albendazole

Scanning of medicine

The pure medicine Albendazole when scrutinized over a range 200-400 nm to determine its lmax, the peak was observed at 291 nm.

Preparation of standard graph of Albendazole

Albendazole have the maximum absorbance at 291 nm. Standard graph of Albendazole in water was colluded by taking attention ranging from 10 to 100 µg/ ml and a good correlation was attained with R2 value of0.9991.

Concentration(mcg/ml)	Absorbance at 291 nm
0	0
10	0.022
20	0.07
30	0.118
40	0.17
50	0.23
60	0.286
70	0.33
80	0.392
90	0.442
100	0.505

Table: Preparation of standard graph of Albendazole in distilled

Pars of triplet were reported

R2 = 0.9991

pitch = 0.010914

Summary

Fast disintegrating tablests of Albendazole prepared by direct contraction system

- The in vitro medicine release from expression containing superdisintegrant SSG was set up between87.64 ±2.36 to96.70 ±1.64 in 10 min and the maximum medicine release was set up with F2 expression.
- The in vitro medicine release from expression containing superdisintegrant CCS was set up between94.20 ±2.34 to95.72 ±2.14 in 10 min and the maximum medicine release with F9 expression.
- The in vitro medicine release from expression containing superdisintegrant CP was set up between90.75 ±2.06 to97.32 ±1.24 in 10 min and the maximum medicine release with F14formulation.
- The in vitro medicine release from expression containing superdisintegrant L- HPC was set up between90.75 ±1.09 to 96043 ±2.32 in 30 min and the maximum medicine release with F16 expression.

Conclusion

Fast disintegrant tablets transfigure into easy- to- swallow suspense on contact with the slaver, after ingested in mouth. These are particularly useful for pediatric or senior cases, can be taken without liquids. The developed phrasings have suitable characteristics. Among the four superdisintegrants, Crosspovidone (F14) showed good disintegrants property. It has also shown good water immersion rate.

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