

Formulation and evaluation of chewable tablets of pomegranate peel extract

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Abstract -Nowadays, dental caries is one of major oral disease caused due to facultatively anaerobic, gram-positive *Streptococcus mutans*. Pomegranate peel powder extract is known to have activity against *Streptococcus mutans*. The study concludes that pomegranate peel extract is a natural antibacterial source can be used in formulating chewable tablet which are better than chemical formulations specially mouth washes as stay-in-mouth time of these chewable tablet are extended ensuring good antibacterial activity with good organoleptic properties.

metabolize sugars to produce acid, which over time demineralizes tooth structure.

METHOD OF PREPARATION

1. The extract was mixed sucrose, mannitol, lactose and the pomegranate powder so obtained was moistened with aqueous solutions of gum acacia.
2. The material obtained was granulated through sieve number 18 and dried to constant weight at room temperature.
3. The dried granules were passed through sieve no 22 and mixed with required quantity of starch and talc.
4. The granules were evaluated for angle of repose (funnel method), bulk density, and car's index using method described in literature.
5. The tablets were compressed to weight of 450mg using D tooling on Remake tablets machine (single punch machine) and evaluated for hardness test, friability and uniformity of weight test, disintegration test.

INTRODUCTION

The term “dental caries” was first reported in the literature approximately around 1634, and it originates from the Latin word “caries,” which stands for decay. The term was initially used to describe holes in the teeth.^{1,7} Dental caries is reported to be one of the oldest and most common diseases found in humans. Dental caries is a prevalent chronic infectious disease resulting from tooth-adherent cariogenic bacteria that

Batch no.	F1	F2	F3
Ingredients	Mg/Tab	Mg/tab	Mg/tb
Pomegranate peel extract	150 mg/Tab	150 mg/Tab	150mg/Tab
Mannitol	0.5 ml/Tab	0.5 ml/ Tab	0.5 ml/Tab
Sucrose	100 mg/tab	90 mg/tab	80mg/tab
Lactose	135 mg/tab	145 mg/Tab	155 mg/tab
Gum acacia	6 mg/tab	5mg/tab	5mg/tab
Talc	4mg/tab	4 Mg/tab	4 Mg/tab
Water	Q.s	Q.s	Q.s
Total	450	450	450

TABLE: Formula of chewable tablets



Fig.no.2.Chewable tablets of pomegranate peel extract

Evaluation of Prepared Tablets :

1.General Appearance :

The physical examination is done by visual, colour, odour, size, shape unique identification making etc.

2 Thickness:

Ten tablets were selected randomly from individual formulations and thickness was measured by using vernier caliper scale, which permits accurate measurement. The average of 3 readings was taken as thickness of the tablets.

3 Weight Variation:

Twenty tablets were taken randomly, weigh individually and average weight was determined. The individual tablet weight was compared with average tablet weight.

4 Hardness:

Tablets require certain amount of strength or hardness, to withstand mechanical shocks of handling in manufacture, packaging, and shipping. The most widely used apparatus to measure tablets hardness (strength) is the pifzer hardness tester. Method:- Ten tablets randomly selected and hardness was measured in pifzer hardness tester.

5 Friability:

Friability is related to the ability of tablets to withstand both shocks and abrasion without crumbling during manufacturing, packing, transportation and consumer handling. friability can be evaluated by means of Roche friability test apparatus friabilator. compressed

tablets that loose less than 0.5% to 1.0% in weight aee generally considered as acceptable.

Method: - Ten tablets were randomly selected and weighed (initial wt.) and then transfer into friabilator. It was subjected to 100 revolutions in 4 minute The tablets were dedusted and reweighed (final wt.) these two weight (i.e . initial and final) were applied to calculate the friability.

6 Disintegration Test :-

In vitro disintegration time was measured using USP disintegration test apparatus. for DT test randomly one tablets were selected from each batch and test was performed in it ml distilled water 37oc temperature and at the rate of 30+ 2 cycle / min.

7 Stability Test :

The purpose of stability testing is to provide evidence on how the quality of a drug substance or drug product varies with time under the influence of a variety of environmental factors such as temperature, humidity and light, enabling recommended storage conditions, re-test periods and shelf-lives. The International Conference on Harmonization (ICH) Guidelines titled “Stability Testing of New Drug substance and Products” (QIA) describes the stability test requirements for drug registration applications in the European Union, Japan and the United States of America.

RESULTS

In preparing chewable tablets from ethanolic extract of pomegranate peel powder, wet granulation method was used. The ingredients of chewable tablet from pomegranate peel powder extract were indicated in table no.1. Initially formula I & formula II were tried it was observed at granulation stage become sticky, because the sucrose is hygroscopic therefore it was decided to reduce the quantity of sucrose and increase the quantity of lactose in formula F3, therefore formula 3 were used for the chewable tablet formulation

Sr. No.	Test	Observations	Conclusion
1	Angle of repose	45°	Excellent
2	Bulk density	0.54	Excellent
3	Tapped density	0.68	Excellent
4	Cars index	19	Excellent
5	Hausner ratio	1.24	Excellent

Table: pre compression study

The tablets were evaluated for physical appearance of the tablets were smooth ,absence of crack ,uniform. The chewable tablets were evaluated for various performance properties.

Sr no	Test	Observation
1	Average weight	450 mg
2	Friability	1.06 %
3	Hardness	05(mg/cm

Table: Post compression study

CONCLUSION

The chewable tablets prepared of the pomegranate peel powder extract can be used as a potential treatment of dental caries. It is seen that prepared chewable tablets can be a good dosage form for the dental carries treatment. The activity was retained even upon exposure of tablets to accelerated storage condition of 400c. Herbs play major role in the treatment than the allopathic medicine because of less side effects, low cost and easy availability. The research work done on that basis and selected plant for the formulation was proved for the use to prevent of dental carries.

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