



ORIGINAL RESEARCH PAPER

Oral Pathology

AN ALTERNATIVE TO TOOTHPASTE WITH CHEWABLE TOOTHPASTE TABLETS -A REVIEW

KEY WORDS: Toothpaste tablets, toothpaste tubes, Landfills.

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ABSTRACT

Toothpaste is a gel or paste type of substance which is applied to a toothbrush to clean the teeth. This mainly white substance removes particles of food and plaque from your teeth and prevents bad breath as well. Toothpaste tablets are exactly what they sound like — a waterless toothpaste powder that's pressed into a tablet. An alternative option for toothpaste is toothpaste tablets, the use of toothpaste tablets is easy to recycle the toothpaste tablets jar but not toothpaste tubes. The toothpaste tube to fully biodegrade take 500 million years, its property as much as like toothpaste and also having the ability among plaque control and to provide the better oral hygiene. The materials which are used to make toothpaste tablets are polishing agent which is used abrade the tooth surface, therapeutic agent like antimicrobial, anti-inflammatory, antiseptic agents and oral transporter. And the methods of preparation is conventional method either by dry or wet granulation method. My aim of the content is to avoid toothpaste tubes and there by using toothpaste tablets.

INTRODUCTION:

Most people use toothpaste everyday in day to day life. The tooth paste is contained within a paper box. The paper look beautiful and protection for tooth which attracts the consumer. The use of paper box which provides cost for maker and useless for consumers. Throughout the world millions of people use toothpaste with box but some countries like Sweden, iceland are using toothpaste without box. It tells that toothpaste can be used without the paper box. It depends on the user acceptance. on an average a single person uses three tubes per year it makes 109 million of waste paper boxes in America. The world toothpaste market is growing at a rapid pace and the estimated rate of growth will be 6.1 % in 2019-2024. In India approximately 682 million that is 50% of users uses toothpaste regularly in daily life. In a single year a person can use 10 tube of 80 gms toothpaste tubes. It produces 6820 million of waste toothpaste tubes. So on an average most of the India people creating 20460 tonns waste of toothpaste box. The second biggest organic waste is considered as a toothpaste tube which is 13% as per the center of environment and development(1).

The business waste is a waste mwnagement company, they reported about the toothpaste tubes that is these are the plastic waste thrown by the peolpe. The UK throws away 300 million toothpaste tubes every year. The toothpaste tubes waste are gathered together, it can surround the world around 2 times. The toothpaste tubes are made up of various plastic materials that includes a metal layer which is hard to separate for the recycling process.

The toothpaste tubes take on average 500 million years to biodegrade in landfills.

It says that with the use of toothpaste tubes there will be a huge hole somewhere in the world(2).

HISTORY OF TOOTHPASTE:

Toothpaste was introduced by the ancient people. There is no any other options for toothpaste. The toothpaste design first made in india and china. During that period of 300-500 BC pulverized egg, clam shells and squashed bone were used to abrasive component to clean the tooth surface. In the 19th century were the modern toothpaste system gets started. Later, soap and chalk were added to these

preparations. After years, some other ingredients were added, sodium lauryl sulfate, which is used as emulsifying agent. Recently, they develops a toothpaste which mechanism was to prevent and treatment of oral diseases. By adding the active ingredients.

Ideal properties of toothpaste:

- Keep the oral environment fresh and clean
- Non toxic and non irritant
- Good abrasive
- Stainless tooth
- Prolonged effect
- Cheaper and
- easily available(3).

The role of dental plaque and gum disease inhibit by using the chemicals was first realized. Toothpastes is the only choice for delivery those chemicals. Toothpastes usually consist of fluoride as a active agent and, hydrated silica, Di calcium phosphate carbonate, Calcium carbonate as abrasive agent. Detergent as, sodium lauryl sulfate and some flavoring agents.(4)

Toothpaste tablets:

Toothpaste tablets and toothpaste contain more over same ingredients. In toothpaste tablet there is no water content, then only it could be change into tablet form. Toothpaste tablets need saliva to foam.(5)

Chewable toothpaste tablet contains ingredients like

- Sucralose,
- Xylitol
- Aspartame,
- Mannitol they have enough potential to prevent plaque accumulation.(6)

Benefits of toothpaste tablets:

Toothpaste tablets are sold in aluminum jar, glass and bottles. They are recyclable and environment friendly.(5)

Recently, toothpastes in the form of tablets have been developed. Tablets are a more environmentally friendly alternative to toothpaste. Tablets are dry preparations that contain all the chemicals needed for dental treatment. In addition to fluoride-free toothpaste tablets, fluoride toothpaste tablets are available. The advantage of chewable

toothpaste tablets is that they can be unwrapped and placed in the mouth, then chewed and brushed with a wet toothbrush.(7) Consumers should prefer toothpaste tablets for good quality ,eco friendly and fresh oral health.Consumers should know about the relation between oral health and our planet. 1450 ppm of fluoride can protect our oral environment and also earth environment by avoiding the toothpaste tube.(8) Lindsay McCormick, founder of Bite Toothpaste tablets , to eliminate more than 1 billion toothpaste tubes that are destined for landfills every year.(9)

Hence, consumers don't have to carry around bulky toothpaste tubes.And need not worry about the paste going dry when they forget to close the cap. Chewable toothpaste tablets are a good option for maintaining oral hygiene levels while traveling. They can be easily stored in small bags and consumers can use them even without a toothbrush for a fast cleansing.(10)

As a result, toothpaste tablets are becoming a viable solution. Toothpaste tablets are small chewable tablets that can be chewed into a paste before brushing and have similar effectiveness to traditional toothpaste. When tablet manufacturers use recyclable or recyclable packaging, they also gain popularity among environmentally conscious consumers.(11)

Oral microbes:

In oral cavity there are millions of microbes present ,some particular microbes are Aggregatibacter, Prevotella,Streptococcus mutans,Fusobacterium and Porphyromonas gingivalis they are present in oral mucosa,dorsum of the tongue and pit and fissures of the teeth.These bacteria present in two areas supragingival area and subgingival area.(12)

What is dental plaque?

Although microbial adhesion to tooth surfaces is a first step in plaque formation, the important feature of plaque formation is likely to be microbial proliferation.And some local factors are also involved in plaque formation,those who are not maintaining the proper oral hygiene and economically backward people.(13)

What are the most commonly occurring disease in oral cavity?

The most commonly occurring microbial disease in the oral cavity is dental caries and periodontal disease . Both of these oral diseases as specific host inputs like diet and behavior in dental caries and decrease immune system response in periodontal disease.(14)

Toothpaste tablets against Dental caries :

Tablets containing fluoride and xylitol form a surface layer over the tooth that prevent dental caries. nanohydroxyapatite strengthens the teeth.(5)

Disadvantage of toothpaste tablets:

- Expensive.
- They might not be a safe for everyone (15).

PREPARATION OF CHEWABLE TABLETS:

These conventional methods of preparation include granulation methods: either wet or dry granulation, preferably wet granulation. Depending on the properties of the ingredients of the toothpaste tablets, they are mostly produced by the wet granulation method.Direct compression without a granulation step can also be chosen for the present composition provided that the production of non-granulated tablets results in a limit.(16)

MATERIALS:

The present invention relates to a toothpaste tablet comprising: (a) polishing agent 20- 80% ,thickening agent

0.2-5.5%,and tableting carrier 30-80%.

1.Polishing Agent:

The toothpaste tablets contain polishing agents for example, calcium pyrophosphate, tricalcium phosphate ,silica,dicalcium orthophosphate dihydrate, calcium carbonate.

2.Thickening Agent:

Thickening agents in the toothpaste tablets consist of starch,agar,gum,alginate and cellulose.

3.Tableting carrier:

The materials which are able to convert into tablet form are tableting carriers and have efficacy to dissolution and destruction in the mouth.They are a combination of sugar and alcohol.

4.Therapeutic Agents:

A.Anticariogenic Agents:

A cariogenic agent in the tablet is fluoride .Materials include: sodium monofluorophosphate ,sodium fluoride stannous fluoride,potassium fluoride.These are the fluoride ions which are water soluble.

B.Anticalculus Agents:

Preferred anticalculus agents are a pyrophosphate group.

C.Antimicrobial Agents:

Antimicrobial agents include anticalculus agents and antibacterial agents.Anticalculus agents were mentioned above and those antibacterial agents are such as broad spectrum antibiotics and peroxides.

D.Anti-inflammatory Agents:

The anti-inflammatory agents are used as Nonsteroidal anti-inflammatory drugs.And their present composition is about 0.2% to about 0.8% in present invention.

5.Oral Carrier:

The oral carrier includes

- 1.Surfactant
- 2.Effervescent Agent
- 3.Humectant
- 4.Tableting Aid
- 5.Sweetening Agent
- 6.Flavoring Agent
- 7.Coloring Agent
- 8.Preservative
- 9.Cooling Agent
- 10.Buffering Agent

The toothpaste tablet composition prepared by a conventional method:

Component %by weight

- Mannitol 47.00
- Calcium Carbonate 27.00
- Pregel Starch 0.50
- Aspartame 0.35
- FD & C Blue 10.01
- Flavor 1.10
- Sodium alkyl sulfate 1.00
- Potassium citrate 2.10
- Xanthan gum 2.85
- Titanium dioxide 0.50
- Sodium carboxymethyl cellulose 2.65
- Synthetic silicate 0.20
- Sucrose 10.00
- Magnesium stearate 2.50
- Talc 2.00.(16)

Marketed Formulations of Chewable toothpaste tablet:

- 1.Bite

2. Dent tab
3. Forsica
4. Archtek toothpaste tablet
5. Globoid toothpaste tablet
6. WeldentalChew tab Gentle Whitening Toothpaste Tablets Peppermint.(16)

CONCLUSION:

It was concluded that the developed chewable tablets could be a better alternative to the conventional use of a tube of toothpaste. Tablet computers are easy and convenient to use. They provide a precisely measured dose of active ingredient in a convenient, portable package and can be designed to protect unstable drugs or mask unpleasant ingredients. Easy to use while traveling. It does not require water, can be taken anytime, anywhere because they are anhydrous, toothpaste tablets do not require chemical preservatives and the tablets are available in fluoride and non-fluoride versions. Reduce product waste to raise general consumer awareness of useless waste. The future of the planet is in our hands and by reducing, reusing and recycling we can ensure environmental sustainability for many years to come.

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