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BROWN SUGAR LOZENGES

K.Teja sri Soumya, Guest faculty in Andhra University, Executive Research and Development, Vasudha Pharma Chem Limited, Assistant Professor, Bharat Institute of Technology, Mangalpally, Ibrahimpatnam, Hyderabad, Ranga Reddy Dist, Telangana, India, 501510.

M.Meghana, B.Pharmacy 4 year, Bharat Institute of Technology, Mangalpally, Ibrahimpatnam, Hyderabad, Ranga Reddy dist, Telangana, India, 501510.

MD.Maqsood, B.Pharmacy 4 year, Bharat Institute of Technology, Mangalpally, Ibrahimpatnam, Hyderabad, Ranga Reddy dist, Telangana, India, 501510.

➤ **ABSTRACT :-**

Lozenges are one of the very popular and better innovative dosage form and oral confectionary products. Lozenges have been used since 20th century and are still in commercial production. The “Lozenges are solid medicated, flavoured and sweetened base dosage forms intended to be sucked and hold in the mouth”. Brown sugar is a substitute derived from palm plants, such as aren (Arenga Pinnata (Wurmb) Merrill), Kelapa (cocos nucivera), siwalan (Borassus flabellifer L). This research aims to investigate the potential o resource, social and economic of brown sugar as a natural sweetener that can substitute sugar cane. The study shows that the aren trees which is the raw material of brown sugar is available in abundance, especially in mainland Southeast Asia, has high adaptability, is also serve as a forestry crop. Furthermore, brown sugar business can be done by people with low education, and in all age groups but predominantly in the range of productive age. Brown sugar is a natural sweetener because of its natural raw materials and the way of processing so valuable health. Economically, brown sugar has proven to be a source of livelihood and feasible to be developed. The implication of this study is about information to explore the potential of resources, social, and economics of brown sugar as a natural sweetener internationally.

Keywords: Naturalsweetener, Brown sugar, Aren tree, Lozenge, Feasibility.

➤ **INTRODUCTION :-**

Sugar is a strategic commodity because it has used worldwide. Sugar is used as an additive in various foods and beverages consumed daily by the world community. [1] According to Dubai’s Sugar Yearbook data 2007 shows that sugar consumption was the smallest in Sub-Saharan Africa, at 8 million tonnes of sugar or 15.2 kg in per capita terms, then comes North America at around 15 million tones and Western Europe, at around 15 million tonnes and Western Europe, at around 18 million tonnes. All these four regions show aa per capita consumption of at least 32 kg or more. Both the Indian Subcontinent and Latin America are consuming around 27 milion tonnes of sugar a year, but per capita consumption in the Indian Subcontinent was only 16.3 kg while in Latin America it was much greater at 47.2 kg.

Increase in sugar consumption also occurred in India and Indonesia. [2] said that India's sugar consumption has increased steadily. Per capita sugar consumption has steadily increased from 5.3 kg per annum in the early 1960's to around 18 kg per annum at 2011. Increased consumption of sugarcane in Indonesia occurred every year but is not followed by the increased of production. It is pointed out by the [3] that sugar cane industry in the Indonesia is not able to meet the needs of the national consumption of sugar cane.

There is the phenomenon that there is a great need for sugar as a sweetener, but people want a low-calorie sweetener and healthy. It is suitable with [4] which said that sugar is a purified(refined) sugar cane or beet juice after all the vitamins, minerals, proteins, enzymes and other beneficial nutrients discharged. As a result, the sugar does not contain a variety of nutrients and fiber found in other, more complex carbohydrates such as grains, fruits and vegetables.

There is an alternative sugar. It is call low calorie sweeteners that it's ingredients many times sweeter than sugar(sucrose). Examples include acesulfameK, aspartame, saccharin, stevia and sucralose which are between 150 and 600 times sweeter than sucrose, and neotame which is between 7,000 and 13,000 times sweeter. Low calorie sweeteners are a valuable and safe tool for providing consumers with the opportunity to choose foods and beverages with different calorie levels [5]. According to [5] that in europe and around the world, low calorie sweeteners, like other food additives, undergo a rigorous assessment process.

Sugar consumers turn to other sources of natural sweetener for health issues. Commodities are becoming natural sweetener in stevia. Lately, many people complain about the aftertaste of stevia, and it doesn't melt or cook like sugar dose [6]. Therefore, many people in the natural health community have been turning to agave nectar, a low-glycemic sugar made from the bulbous roots of agave plants. [6] continued that agave plants has also been embroiled in controversy about whether it is truly "natural" or even low glycemic.

Next, [7] said that the emphasis on the consumption of natural foods has resulted in the use of palm sugar concentrate as an alternative sweetener. There is brown sugar as the substitute of sugarcane. Brown sugar is a natural sweetener derived from the sap of palm plant, like aren, kelapa, siwalan. Productivity of sap from the aren was the highest among the sap of kelapa, siwalan. Thus, the study of the natural sweetener will be focused on brown sugar derived from aren(Arenga pinnata (wurmb) Merrill).

➤ **TYPES OF BROWN SUGAR :-**

- 1. DARK AND LIGHT SUGAR-** The amount of molasses added to refined sugar defines the brown color. Light brown sugar contains 3.5% molasses and has a caramel taste where as dark brown sugar contains 6.5% molasses and has a comparatively deeper taste.
- 2. DEMERARA SUGAR-** This unrefined medium brown sugar originated from the Demerara region of Guyana, South America. The sugarcane juice is boiled to reveal the large sugar crystals containing molasses before putting through a centrifuge to remove moisture.
- 3. MUSCOVADO SUGAR-** This is an unrefined and very dark brown color with a strong flavor. The sugarcane juice is pan-heated and evaporated and then pounded to get the final product.



➤ **MERITS OF BROWN SUGAR :-**

- a) **RELIEVES MENSTRUAL CRAMPS-** It may help reduce period cramps and relieve menstrual symptoms. The consumption of brown sugar tea may even help in replenishing the blood lost during menstruation.
- b) **PREVENTS UVB-INDUCED SKIN AGING-** It may prevent UVB-induced skin aging, skin thickening, and wrinkle formation. It also helps to remove dirt and bacteria from the skin.
- c) **CONSTIPATION-** It may also prevent constipation in children and help in reducing pain during excretion.

➤ **DEMERITS OF BROWN SUGAR :-**

If brown sugar is consumed in large amounts it may increase the risk of

- Weight gain.
- Yeast infections.
- Diabetes.

➤ **FORMULATION OF BROWN SUGAR LOZENGES :-**

The raw materials used in brown sugar lozenges contain brown sugar, methyl cellulose, citric acid, glycerine, paracetamol, colorants e.t.c.

1) **BROWN SUGAR :-**

Brown sugar is a mixture of sugar and molasses, giving it a darker colour. It differs from regular white sugar in flavor, baking use, production, and slightly in nutrient content. Sugar is a natural ingredient that has been part of the human diet for thousands of years. Brown sugar has been generally used in lozenges because of their value as neutral sweetener, their ready solubility.

2) **METHYL CELLULOSE :-**

Methyl cellulose is a compound derived from cellulose. It is a solid under variety of trade names and is used as thickener and emulsifier in various food and cosmetic products, and also as a bulk forming laxative.

3) CITRIC ACID :-

Several of the Drugs have an unpleasant or bitter taste, making patient compliance difficult, and taste masking is important in such cases. Citric acid is used to mask the bitter taste of drugs and improve their palatality.

4) GLYCERINE :-

Adding a small amount of glycerine when heating sugar and water to high temperatures helps to prevent the sugar from crystallising. Glycerine also works as a softening agent in candy giving your fudge, truffles and caramels a soft creamy consistency.

5) PARACETAMOL :-

Paracetamol was formulated as lozenges to provide slow release medicament for the management of fever and pain.

6) COLORANTS :-

Colorants are incorporated in to lozenges for appearance, product identification, and masking of physical degradation. Suppliers of colors are excellent sources of information on current regulatory status of Colorants.

➤ METHOD OF PREPARATION**❖ CANDY BASED LOZENGES****a) HEATING AND CONGEALING TECHNIQUE [8]**

Syrupy base was prepared in a beaker by dissolving the required amount of sugar in water and kept for heating on a hot plate. Temperature was maintained at 105-110 degree centigrade till it became thick. The drug and other excipients were added manually and mixed thoroughly after 30 min continue with process of heating. The prepared mass was further heated for 45 min and then plasticizer was added in to it. Then above Syrupy base was poured in to pre-cooled and prelubricated mold and the mold was kept aside for 10-15 min. Lozenges were removed from mold and were kept for air drying.

b) MELTING AND MOLD TECHNIQUE [9,10]

PEG was melted on water bath and mixed with the other ingredients to form a homogeneous mixture. Subsequently, the mixture was poured in to the desired shape and size stainless steel mold to form a candy.



➤ **STORAGE :-**

These preparations should be stored away from heat and out of the reach of children. They should be protected from extremes of humidity. Depending on the storage requirement of both the drug and base, either room temperature or refrigerated temperature is usually indicated.

➤ **PACKAGING :-**

Hard candies are hygroscopic and usually prone to absorption of atmospheric moisture. Considerations must include the hygroscopic nature of the candy base, storage conditions of the lozenges, length of time they are stored and the potential for drug interactions. These products should be stored in tight containers to prevent drying. This is especially true of the chewable lozenges that may dry out excessively and become difficult to chew. If a disposable mold with a cardboard sleeve is used, it is best to slip this unit in to a properly labelled, sealable plastic bag.

➤ **CONCLUSION :-**

Lozenges are medicated confections that have been developed about 20 th century ago and are still under commercial production. Most of the preparations are available over the counter products and are very economic dosage forms. They are designed for local as well as systemic therapy. A wide range of actives can be incorporated within their structure. Lozenges enjoy an important position in pharmacy and will continue to remain so in future.

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