

LAMPIRAN

Lampiran 1 Hasil publikasi *review* jurnal pertama

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Xylitol Properties and Identification

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Abstract:

Background: Xylitol is a sugar alcohol that has 5 carbon chains. Xylitol has a function as an antimicrobial, strengthens gums, prevents plaque on the teeth, is antidiabetic, additives in topical preparations, and sweeteners. The advantage of xylitol over sucrose is that it has a fairly low-calorie content with a sweetness equivalent to that of sucrose. Xylitol is classified as a safe sweetener for diabetics because it has a much lower glycemic index value.

Key Word: Application; Isolation; Properties; Xylitol.

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Xylitol

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Xylitol is the top value-added chemical considered by the US department of energy that can be produced from plant biomass¹. Xylitol-based polyester has been widely developed by scientists as a biodegradable material in tissue engineering applications. Its inert nature and no damaging effects on cells make Xylitol a popular choice as it can be used to make poliol-based polymers².

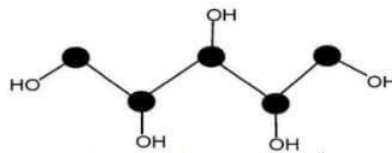


Figure no 1. Xylitol structure³

1. Properties of Xylitol

Carried out the synthesis of xylitol from the hydrolyzate of empty oil palm bunches and then carried out the characteristics of the physicochemical properties of xylitol. The xylitol crystals produced in this study are a bit sticky so that the moisture content of the xylitol crystals produced in this study is higher than the xylitol crystals on the market. Heating xylitol at a temperature of 70°C produces moisture content values ranging from 20.61% to 21.97%. While heating at a temperature of 55°C produces a moisture content value of 23.06-24.54%. Lower temperatures bring xylitol to form larger porosity in crystals and the hygroscopicity of xylitol is at a value of 23.44-25.04% which means it is very hygroscopic. The categories for the distribution of the hygroscopicity of a material are as follows⁴.

Table no 1. Material hygroscopicity category

Category	Hygroscopicity (%)
Non-Hygroscopic	<10%
Less Hygroscopic	10,10-15%
Hygroscopic	15,10-20%
Very hygroscopic	20,10 – 25%

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Lampiran 2 Hasil publikasi *review* jurnal Kedua

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Review : Xylitol In Dental Care Formulation For Caries Prevention

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ABSTRACT: Xylitol is a white, odorless crystalline powder with the chemical formula $C_5H_{12}O_5$ with chemical bonds 2R,3r,4S-Pentane-1,2,3,4,5-pentahydroxypenta. Xylitol has a melting point of 92-96 °C and a boiling point of 126 °C, the density of xylitol is 1.52 g/Cm³ with a mole mass of 152.15 g/mol. Xylitol has a calorific value of 2.4 calories/gram. One of the most common oral and dental diseases in the community is dental caries. Dental caries often occurs among children and adults, mostly due to not taking dental care, lifestyle, and environmental factors. The acid produced in the oral cavity is a trigger for dental caries and the process of demineralization. Another factor also stated that the occurrence of caries due to substrates of fructose, glucose, and sucrose, as well as fermented carbohydrates, could be at risk of triggering the development of caries caused by *Streptococcus mutans* bacteria. These bacteria can multiply when the contact between dental plaque and its substrate increases, while the salivary flow decreases. This journal review aims to provide information about xylitol and its relationship to caries as well as formulas for dental care preparations containing xylitol.

KEYWORDS: Caries, Dental, Xylitol.

INTRODUCTION

According to research, xylitol production in the industry generally uses hemicellulose as the basic material from birch trees and corn cobs. Hemicellulose is a heterogeneous polysaccharide polymer composed of glucose, arabinose, mannose, and xylose units. This xylose will then be degraded by yeast into xylitol.



Structure of Xylitol

Xylitol is alcohol of pentahydroxy sugars which is used as a natural sweetener in foods. Xylitol has five-carb poliols. The use of xylitol, especially in the food industry, is used as an alternative sweetener because it has a sweet taste that is equivalent to sucrose with a lower calorific value and glycemic index. Xylitol can also be used in health products such as toothpaste and mouthwash, cosmetics, and therapeutic agents in the pharmaceutical industry. Xylitol can be produced by chemical processes or by microbial processes (microbial decomposition at mild pressure and temperature and does not require very pure xylose as a carbon substrate). [5] Some microorganisms that have the ability to produce xylitol include bacteria, fungi, and yeasts.

Xylitol demand continues to increase annually by 6%. Globally, xylitol has a wide market, and demand for xylitol is in great demand in the health sector. Xylitol produced in the field of biotechnology as a sugar substitute has the potential due to its simpler steps and lower costs than chemically produced xylitol. [6] Xylitol can be extensively documented in the literature because it has a low glycemic index. Naturally, Xylitol has a very low concentration of fiber contained in vegetables, fruits, and fiber materials such as corn husks and sugarcane. [7] Xylitol has few or no side effects, has fewer calories, and is less likely to cause cavities. Xylitol also has lower cariogenicity than sucrose.

Lampiran 3 Surat pernyataan bebas plagiasi

SURAT PERNYATAAN

Yang bertanda tangan di bawah ini,

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Review Xylitol Pada Formulasi Perawatan Gigi Pencegah Karies

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Bandung, Agustus 2022

Yang membuat pernyataan



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