BAB I

INTRODUCTION

A. Background

Dental and oral health is one part of the field of health law in accordance with article on the page 93-94 on the law of number 36 of 2009 concerning health.[1] Development in the field of dental health is an integral part of health development in general. Dental and oral diseases are widespread diseases in Indonesian society. Factors in the cases of dental and oral diseases can be influenced bythe environment, behavior, and dental and oral health services.[2]

The mouth is one of the organs that often becomes focal infection (the process of spreading) in some cases of infection of vital organs. In the mouth, saliva is produced which has a major role in cleaning the mouth by keeping the mucous membrane moist, regulating the *potential of Hydrogen* (pH) saliva and digesting food. pH of saliva is a liquid consisting of a mixture of secretions from the salivary glands contained in the oral cavity with an acidity of 6-7.[3] The acidity level of saliva can also have an effect on the onset of tooth holes or caries. The lower the pH of saliva, the higher the caries. Food ingredients that can lower the pH of saliva are sweet and sticky foods that can be left in the mouth such as chocolate can be easily fermented by bacteria, so that it can potentially increase bacterial growth within 3 hours, thus affecting the

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[1] Hendrik, 2012. *Etika dan Hukum Kesehatan*, Buku Kedokteran : Jakarta

[2] Alhamda, S. 2011. *Status Kebersihan Gigi dan Mulut dengan Status Karies Gigi (Kajian pada Murid Kelompok Umur 12 Tahun di Sekolah Dasar Negeri Kota Bukit Tinggi)*. Jurnal Berita Kedokteran Masyarakat, Vol.27, NO.2, h.108

[3] Mariyam dan Alfiyanti, D. 2016. *Oral Hygiene Menggunakan Madu Menurunkan Risiko Pertumbuhan Bakteri di Mulut Melalui Netralisasi pH Saliva*. Jurnal. Ilmu Keperawatan dan Kesehatan, Universitas Muhammadiyah Semarang

occurrence of dental caries in children.[4] In addition to the type of food, several factors can affect the pH of saliva, namely diet, the use of gargle solutions and stimuli to the speed of salivary secretion.[5]

Gargling is a way that can be done so that the number of cariogenic bacteria is reduced and salivary function is not hampered in the oral cavity.[6] Natural ingredients that can be used for rinsing the mouth are honey and lemon solutions. Honey solution can have an effect on the health of the oral cavity because the glucose content in honey is easily absorbed by the body and honey can inhibit the growth of bacteria.[7] Honey is a natural sweet substance produced by bees with raw materials nektar flowers. The antibacterial properties of honey can help overcome infections in the need and it is anti-inflammatory action can reduce pain and improve circulation which affects the healing process. There are 4 factors responsible for the antibacterial activity of honey. First, high sugar levels will inhibit bacteria so that the bacteria's cannot live and develop. Second, the high acidity of honey (pH 3.65) will reduce the growth and viability of bacteria, so the bacteria's will be die. Third, the presence of the compound hidrogen peroxide (H 2 O_2) which can kill pathogenic microorganisms. Fourth, the presence of organic compounds that are antibacterial.[8]

Honey has alkaline properties (contains alkaline elements) and

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[4] Mariyam dan Alfiyanti, D. 2016. *Oral Hygiene Menggunakan Madu Menurunkan Risiko Pertumbuhan Bakteri di Mulut Melalui Netralisasi pH Saliva*. Jurnal. Ilmu Keperawatan dan Kesehatan, Universitas Muhammadiyah Semarang

[5] Armand, A. 2010. *Perubahan pH Saliva Setelah Mengkonsumsi Minuman Isotonik dan Minuman Produk Olahan Susu pada Mahasiswa FKG USU.* Skripsi. Fakultas Kedokteran Gigi Universitas Sumatra Utara Medan.

[6] Yunitasari, E. 2014. *Perbedaan Sebelum dan Sesudah Berkumur Madu Konsentrasi 75% terhadap Pertumbuhan Streptococcus Mutans di Saliva Anak Usia 10-12 Tahun.* Jurnal. Kedokteran Gigi Universitas Muhammadiyah Yogyakarta Indonesia.

[7] Suranto, A. 2004. *Terapi Madu*. Jakarta : Buku Plus

[8] Zulfahneti, L.S. 2016. *Pengaruh Berkumur dengan Larutan Madu Terhadap pH Saliva Rongga Mulut pada Siswa SD N 56 Anak Air Padang*. Repository. Fakultas Kedokteran Gigi Universitas Andalas Padang

can affect the pH of saliva,[9] the acid content contained in the pH of saliva will become alkaline because it has been changed by honey so that it will maintain healthy teeth and mouth. Honey can reduce the risk of bacterial growth because honey has the ability to neutralize acids produced by microbes in dental *biofilms* (a collection of microorganisms that continue to grow on the surface of the teeth) with the ability to *buffer* (a solution that can maintain pH).[10]

ثُمَّ كُلِي مِنْ كُلِّ الثَّمَرٰتِ فَاسْلُكِي سُبُلَ رَبِّكِ ذُلُلًا ۗ يَخْرُجُ مِنْۢ بُطُوْنِهَا
شَرَابٌ مُّخْتَلِفٌ اَلْوَانُهٗ فِيْهِ شِفَآءٌ لِّلنَّاسِ ۗ اِنَّ فِيْ ذٰلِكَ لَاٰيَةً لِّقَوْمٍ يَّتَفَكَّرُوْنَ

Man has been using honey for medicine, since ancient times. Honey has been mentioned in the literature of ancient kingdoms, such as; Sumeria, Babylonian, Egyptian, and Indian. Muslims use honey as a nutrient and medicine, as mentioned in the Qur'an;

> *"Then Eat of all (sorts) of fruits and walk the way of your Lord which has been made easy (for you). From the bee's stomach comes a drink (honey) of various colors, inside which is a healing medicine for man"* (An-Nahl:69).

In addition to honey, lemon fruit (*Citrus Limon (L.)*) can also be used togargle because it has the ability as antihypertensive, anti-bacterial, anti-inflammatory, antidiuretic, and aromatic. This ability is because lemons contain compounds such as pectin substances, essential oils or ethical oils, and limonene compounds.[11] Lemon contains 5-8% sitrar acid and has a pH of 2-3. Citric acid is the most abundant organic

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[9] Zulfahneti, L.S. 2016. *Pengaruh Berkumur dengan Larutan Madu Terhadap pH Saliva Rongga Mulut pada Siswa SD N 56 Anak Air Padang*. Repository. Fakultas Kedokteran Gigi Universitas Andalas Padang

[10] Mariyam dan Alfiyanti, D. 2016. *Oral Hygiene Menggunakan Madu Menurunkan Risiko Pertumbuhan Bakteri di Mulut Melalui Netralisasi pH Saliva*. Jurnal. Ilmu Keperawatan dan Kesehatan, Universitas Muhammadiyah Semarang

[11] Dalimartha, S, Felix, A. 2011. *Khasiat Buah dan Sayur*, Penebar Swadaya : Jakarta

acid in lemon, with a quantity of up to 47 grams/liter in the juice. Benefits of lemon for health such as citrus fruits too, there are various benefits of lemon for health, including the following lists: overcoming dental and gum problems, lemon essence is also widely used in dental care. Among other things, lemon can help relieve pain if applied to an area that has a toothache. Massaging lemon juice on the gums can also stop bleeding. Lemon can also be used to clean daily teeth, while preventing bad breath caused by dental and gum problems[12].

Saliva affects the process of occurrence of dental caries because saliva affects the environment in the oral cavity.[13] Factors affecting saliva composition and concentration include saliva flow rate, volume, pH, and saliva buffer capacity.[14] The buffer capacity and pH of saliva affect the presence of caries inside the oral cavity. The lower the pH of the saliva, the higher the dental caries. According to research conducted by Soesilo, the optimum acidity (pH) of saliva to inhibit bacterial growth is between 6.5-7.5 and if the oral cavity condition is in a low pH (acidic) state between 4.5-5.5 it will facilitate the growth of acidogenic germs such as *Streptococcus Mutans* and *Lactobacillus*.[15] In addition, a decrease in pH inside the oral cavity can lead to the rapid demineralization of dental elements.[16],[17]

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[12] Albet, R.2013, Januari 2-last update, *Antiseptik Sebagai Obat Kumur* [Hompage of topskripsiku.blogspot.com], [online]. Available: http://topskripsiku.blogspot.com/2013/01/antiseptik-sebagai-obat-kumur.html(diakses08/01/2018)

[13] Sondang P dan Hamada T. *Menuju Gigi dan Mulut Sehat Pencegahan dan Pemeliharaan.* Terbitan I. Medan: USU Press, 2008: 25-37

[14] Rantonen P. *Salivary flow and Composition in Healthy and Disease Adults.* Dissertation. Helsinki: Helsinki University Central Hospital 2003:16-69

[15] Soesilo D, Santosa RE dan Diyatri I. *Peranan Sorbitol dalam Mempertahankan Kestabilan pH saliva pada Proses Pencegahan Karies.* Maj, Ked. Gigi. (Dent.J.) 2005; 38(1):25-28

[16] Haroen ER.*Pengaruh Stimulus Penguyaham dan Pengecapan Terhadap Kecepatan Aliran dan pH Saliva.* Jurnal Kedokteran Gigi UI 2002; 9;29-30

[17] Rai B, Kharb S dan Anand SC. *Saliva as a Diagnostic Tool in Medicial Science:* A Review Study. Adv. In Med. Dent 2008; 2(1): 9-12

Research on the effects of rinsing the mouth with saliva volume testing has never been conducted. Oleh therefore this study was conducted to determine the effectiveness of rinsing the mouth using honey and lemon against pH and saliva volume.

B. Problem Formulation

1. How does rinsing using lemon solution compare with *Trigona sp* honey solution on pH of salivary?
2. How does rinsing using lemon solution compare with *Trigona sp* honey solution on saliva volume?
3. How does rinsing the mouth using lemon solution and *Trigona sp* honey solution affect the reduction of pain levels in canker sores respondents?

C. Research Objectives

1. Knowing the comparison of the effect of rinsing the mouth using lemon with *Trigona sp* honey on the pH of saliva.
2. Knowing the comparison of the effect of gargling using lemon with *Trigona sp* honey on saliva volume.
3. Knowing the effect of rinsing the mouth using lemon solution and *Trigona sp* honey solution on reducing pain levels in thrush respondents

D. Research Benefits

1. Theoretical Benefits

The results of this research can be used as a reference material for further research on the comparison of the effect of rinsing the mouth using lemon solution and *Trigona sp* honey solution on salivary profiles, especially in measuring volume and pH.

2. Practical Benefits

The results of this study are expected to add to the characteristics of science and increase readers insights, especially

in people who have dental caries damage or have disorders of their mouths.

E. Authenticity of Research

The following are some studies related to the theme of this research and the level of novelty on this research from previous studies can be seen in the table below:

Table 1 Authenticity of Research

Tittle of research	Method of research	Variable of research	Result	Different of research
Pengaruh Berkumur Larutan Madu Terhadap pH Saliva Pada Siswa SDN Air Tawar Kecamatan PadangUtara[18]	Pra Eksperimen	**Independent:** Berkumur Larutan Madu **Dependent:** pH Saliva Siswa SDN Air Tawar Kecamatan Padang Utara	Terdapat pengaruh berkumur dengan larutan madu terhadap pH saliva pada siswa/I SDN 16 Air Tawar Timur Kecamatan Padang Utara	**Independent:** Berkumur Larutan Madu dan Lemon **Dependent:** pH, Volume Saliva Mahasiswi UNIDA Gontor Putri
Perbedaan pH Saliva Antara Berkumur Infused Water Lemon Dan Infused Water Stroberi Pada	Quasi Eksperimen atau Eksperimen Semu	**Independent:** Berkumur Infused Water Lemon dan Infused Water Stroberi	Terdapat perbedaan perubahan pH saliva sebelum dan sesudah berkumur infused water lemon dan sebelum dan sesudah berkumur	**Independent:** Berkumur Larutan Madu dan Lemon

[18] Etri Yanti, Doni Marsha, Nike Puspita Alwi, VinoRIka Novia.2017.*Pengaruh Berkumur Larutan Madu Terhadap pH Saliva pada Siswa SDN Air Tawar Timur Kecamatan Padang Utara*. Jurnal Kesehatan Saintika Meditory. Vol 4 No 1.

Penghuni Asrama Griya Bhakti Husada Semarang[19]		**Dependent:** pH saliva Penghuni Asrama Griya Bhakti Husada Semarang	infused water stroberi	**Dependent:** pH, Volume Saliva Mahasiswi UNIDA Gontor Putri
Pengaruh Konsumsi Madu dan Permen Karet Bercylitol Terhadap pH dan Volume Saliva[20]	Penelitian Terapan	**Independent:** Mengonsumsi Madu dan Mengunyah Permen Karet **Dependent:** pH dan Volume Saliva Mahasiswi Universitas Darussalam Gontor	Konsumsi madu berpengaruh terhadap penurunan pH saliva dan berpengaruh terhadap peningkatan volume saliva, Pemberian permen karet berxylitol tidak berpengaruh terhadap pH saliva akan tetapi berpengaruh dalam peningkatan volume saliva	**Independent:** Berkumur Larutan Madu dan Lemon **Dependent:** pH, Volume Saliva Mahasiswi UNIDA Gontor Putri

[19] Sadimin, Irmanita Wiradona. *Perbedaan pH Saliva Antara Berkumur Infused Water Lemon dan Infused Water Stroberi pada Penghuni Asrama Griya Bhakti Husada Semarang.*

[20] Amalia Artamivea. *Pengaruh Konsumsi Madu dan Permen Karet Berxylitol Terhadap pH dan Volume Saliva*. 2021. Universitas Darussalam Gontor.