

13

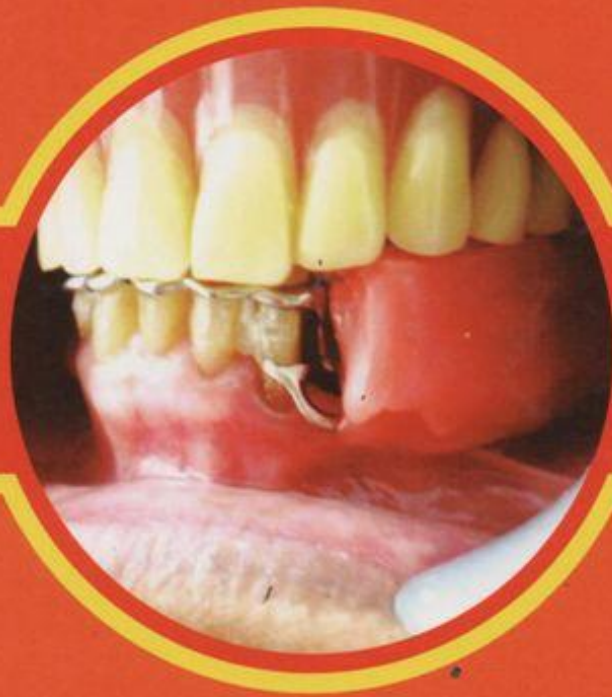
Vol. 10 No.2 Juni 2011

ISSN 1412-8926

Dentofasial

JURNAL KEDOKTERAN GIGI

Terbit setiap Februari, Juni dan Oktober



Dentofas.	Vol. 10	No. 2	Hlm. 65 - 134	Makassar Juni 2011	ISSN: 1412-8926
-----------	---------	-------	------------------	-----------------------	--------------------

Dentofasial

JURNAL KEDOKTERAN GIGI

Terbit setiap Februari, Juni, dan Oktober

PENGELOLA JURNAL DENTOFASIAL

SK Dekan FKG Unhas No.168/H4.15/KP.23/2010 (3 Februari 2010)

Penasehat:

Dekan Fakultas Kedokteran Gigi Universitas Hasanuddin

Ketua Penyunting:

Eri H. Jubhari, drg., M.Kes.
(Prostodonsia-Universitas Hasanuddin)

Wakil Ketua Penyunting:

Juni Jekti Nugroho, drg., Sp.K.G.
(Konservasi-Universitas Hasanuddin)

Penyunting Ahli:

Prof. Dr. Ekky Soeriasoemantri, drg, Sp.Ort(K). (Ortodonsia-Universitas Padjajaran); **Dr. R. Darmawan Setijanto, drg, M.Kes.** (Kesehatan Gigi Masyarakat-Universitas Airlangga); **Prof. Dr. Marthin Luther Manda, M.A., M.Phil.** (Sastra-Universitas Hasanuddin); **Prof. Ismet Danial Nasution, drg., Ph.D., Sp.Prost(K)**. (Prostodonsia-Universitas Sumatera Utara); **Prof. Dr. M. Rubianto, drg, M.S., Sp.Perio(K)** (Periodontologi-Universitas Airlangga); **Prof. Bambang Irawan, drg., Ph.D.** (Dental Material-Universitas Indonesia); **Tis Karasutisna, drg, Sp.BM(K)** (Bedah Mulut-Universitas Padjajaran); **Gus Permana, drg, Ph.D., Sp.PM** (Penyakit Mulut-Universitas Indonesia); **Prof. Dr. Siti Mardewi Soerono Akbar, drg, Sp.KG(K)** (Konservasi-Universitas Indonesia); **Prof. Dr. H. Suhardjo, drg, M.S., Sp.RKG** (Radiologi Dental-Universitas Padjajaran); **Prof. Dr. Iwa Sutardjo Rus Sudarso, S.U, Sp.KGA(K)** (Kedokteran Gigi Anak-Universitas Gadjah Mada-Yogyakarta); **Freddy G. Kuhuwael, dr, Sp.THT-KL(K)** (Fak. Kedokteran-Universitas Hasanuddin); **Prof. Dr. Rasmidar Samad, drg, M.S.** (Kesehatan Gigi Masyarakat-Universitas Hasanuddin); **Prof. Moh. Dharma Utama, drg, Ph.D., Sp.Prost(K)**. (Prostodonsia-Universitas Hasanuddin)

Penyunting Pelaksana:

Prof. Dr. Burhanuddin Dg. Pasiga, drg, M.Kes. (Kesehatan Gigi Masyarakat-Universitas Hasanuddin); **Dr. Indrya K. Mattulada, drg, M.S.** (Konservasi-Universitas Hasanuddin); **Maria Tanumiharja, drg, M.D.Sc.** (Konservasi-Universitas Hasanuddin); **Prof. Dr. Sherly Horax, drg, M.S.** (Kedokteran Gigi Anak-Universitas Hasanuddin); **Dr. Hj. Barunawaty Yunus, drg, M.Kes., Sp.RKG(K)** (Radiologi Dental-Universitas Hasanuddin); **Iman Sudjarwo, drg, M.Kes.** (Teknologi Material-Universitas Hasanuddin); **Dr. Susilowati, drg, SU.** (Ortodonsia-Universitas Hasanuddin); **Prof. Dr. M. Hendra Chandha, drg, M.S.** (Bedah Mulut-Universitas Hasanuddin); **Prof. Dr. Harlina, drg, M.Kes.** (Penyakit Mulut-Universitas Hasanuddin); **Prof. Dr. Hasanuddin, drg, M.S.** (Periodontologi-Universitas Hasanuddin); **Eri H. Jubhari, drg, M.Kes.** (Prostodonsia-Universitas Hasanuddin); **Dr. Edy Machmud, drg, Sp.Prost(K)** (Prostodonsia-Universitas Hasanuddin); **Dr. Nurlinda Hamrun, drg, M.Kes.** (Oral Biologi-Universitas Hasanuddin)

Pelaksana Administratif:

Acing Habibi, drg., Talle
(Fakultas Kedokteran Gigi Universitas Hasanuddin)

Ucapan terima kasih kepada penyunting yang bertugas pada Jurnal Dentofasial Vol.10 No.2 Juni 2011:

Prof. Dr. Rasmidar Samad, drg, M.S., Dr. Nurlinda Hamrun, drg, M.Kes., Prof. Dr. Harlina, drg, M.Kes., Prof. Dr. Marthin Luther Manda, M.A., M.Phil., Maria Tanumiharja, drg, M.D.Sc., Prof. Moh. Dharma Utama, drg, Ph.D., Sp.Prost(K), Dr. Edy Machmud, drg, Sp.Prost(K), Prof. Dr. Ekky Soeriasoemantri, drg, Sp.Ort(K), Eri H. Jubhari, drg, M.Kes., Prof. Dr. M. Hendra Chandha, drg, M.S., Dr. Susilowati, drg, SU., Tis Karasutisna, drg, Sp.BM(K), Prof. Dr. Siti Mardewi Soerono Akbar, drg, Sp.KG(K), Dr. Indrya K. Mattulada, drg, M.S., Prof. Dr. Sherly Horax, drg, M.S., Freddy G. Kuhuwael, dr, Sp.THT-KL(K), Prof. Dr. M. Rubianto, drg, M.S., Sp.Perio(K), Prof. Dr. Hasanuddin, drg, M.S.

Alamat Pengelola:

Lembaga Penelitian dan Pengabdian Masyarakat
Fakultas Kedokteran Gigi Universitas Hasanuddin
Jln. Perintis Kemerdekaan Km 10 Tamalanrea, Makassar 90245 Indonesia
Phone: (062-411) 586012, 587444; Fax: (062-411) 584641, 587444
E-mail: jdentofas@yahoo.com

Dentofasial

JURNAL KEDOKTERAN GIGI

Terbit setiap Februari, Juni, dan Oktober

DAFTAR ISI

	Halaman
1. Daya hambat ekstrak <i>Aloe vera</i> terhadap pertumbuhan <i>Staphylococcus aureus</i> <i>Irene Edith Rieuwpassa, Rahmat, Karlina</i>	65- 70
2. Adanya korelasi kadar TNF- α antara pemeriksaan hapusan lesi dengan pemeriksaan darah perifer pasien stomatitis aftosa rekuren <i>Ali Yusran, Erni Marlina, Sumintarti</i>	71- 75
3. The harbor of microorganism on used toothbrushes <i>Asmawati</i>	76- 78
4. Rendahnya persepsi masyarakat terhadap pemakaian gigitiruan di Desa Ujung Rambung, Kecamatan Pantai Cermin, Kabupaten Serdang Bedagai <i>Dwi Tjahyaning Putranti, Helly Chandra</i>	79- 85
5. Optimalisasi penanganan kasus prostetik dengan perawatan ortodontik <i>Eddy Heriyanto Habar</i>	86- 88
6. Penatalaksanaan impaksi gigi kaninus dengan cara kombinasi pembedahan dan ortodontik <i>Franky Oscar</i>	89- 92
7. Odontoma kompleks pada impaksi gigi molar ketiga rahang bawah <i>Rahardjo</i>	93- 96
8. Penggunaan gigitiruan sebagian lepasan kerangka logam pascaperawatan periodontal <i>Krisnadi Setiawan, Aprillia Adenan</i>	97-100
9. <i>Bleaching</i> internal untuk merawat perubahan warna gigi insisivus sentralis kanan atas <i>Firsta Dianty, Endang Sukartini, Milly Armilia</i>	101-104
10. Pemutihan kembali gigi yang berubah warna pada anak <i>Roedy Budirahardjo</i>	105-110
11. <i>Sinus lifting</i> dengan teknik <i>lateral window</i> dan <i>transalveolar osteotomy</i> <i>Muhammad Ruslin</i>	111-115
12. Komunikasi oroantral: etiologi dan penatalaksanaannya <i>Wiwiek Poedjiastoeti</i>	116-119
13. Pertimbangan laboratoris arah pemasangan rotasi gigitiruan sebagian lepasan rangka logam <i>FX Ady Soesetijo</i>	120-123
14. <i>Splint</i> untuk mengurangi kegoyangan gigi sebagai perawatan penunjang penyakit periodontal <i>Arni Irawaty Djais</i>	124-127
15. Retraksi gingiva sebelum pencetakan untuk mendapatkan gigitiruan cekat yang ideal <i>Hanoem Eka Hidajati, Ratri Maya Sitalaksmi</i>	128-134

The harbor of microorganism on used toothbrushes *Kandungan organisme mikro pada sikat gigi yang telah digunakan*

Asmawati

Department of Oral Biology,
Faculty of Dentistry, Hasanuddin University
Makassar, Indonesia

ABSTRAK

Tujuan penelitian ini adalah untuk mengetahui organisme mikro yang terdapat pada sikat gigi yang telah digunakan. Sampel pada penelitian ini adalah 25 sikat gigi; 10 sikat gigi yang digunakan kurang dari 3 bulan, 10 sikat gigi yang telah digunakan selama 3-6 bulan, dan 5 sikat gigi yang telah digunakan lebih dari 6 bulan. Telah ditemukan beberapa kokus gram positif, diantaranya *Staphylococcus*, *Streptococcus* dan *Diplococcus*. Hasil penelitian ini menunjukkan bahwa ada beberapa jenis organisme mikro yang ditemukan pada sikat gigi yang telah digunakan. Sikat gigi yang telah digunakan lebih dari 6 bulan, lebih banyak terkontaminasi organisme mikro daripada sikat gigi yang digunakan kurang dari 3 bulan dan 3-6 bulan. Disimpulkan bahwa makin lama sikat gigi digunakan, makin banyak jumlah organisme mikro ditemukan pada sikat gigi.

Kata kunci: sikat gigi, kontaminasi organisme mikro

ABSTRACT

The purpose of this study was to evaluate the microorganisms found on used toothbrushes. In this study 25 toothbrushes were investigated, 10 toothbrushes were used less than 3 months, 10 toothbrushes have been used for 3-6 months, and 5 toothbrushes have been used for more than 6 months. Some gram-positive coccus, such as *Staphylococcus*, *Streptococcus* and *Diplococcus*. The results showed there were microbial harbored of used toothbrushes. Toothbrushes that have been used for 6 months were harbored more microorganisms than the toothbrushes that have been used less than 3 months and 3-6 months. It can be concluded that the longer using time of toothbrush the more increase of microorganism amount found on toothbrush.

Key words: toothbrush, microorganism contamination

Correspondence: Asmawati, Department of Oral Biology, Faculty of Dentistry, Hasanuddin University, Jl. Perintis Kemerdekaan Km.10, Makassar, Indonesia. E-mail: asmaamin68@yahoo.com

INTRODUCTION

Oral health of Indonesian people is still a major concern. The objective of oral health is to gain a healthy mouth and good dentition, and also a good function of speech and mastication.¹ Oral health status is influenced by four important factors; namely heredity, environment (physical and social culture), behavior, and health service. Of those four factors, behavior plays an important role in oral health status and could influence environment and health service factors.²

Theoretically, once-a-day teeth cleansing is enough to prevent plaque attachment. However, it is already settled to brush the teeth twice a day to gain a healthy mouth. Therefore it needs to build a good understanding in increasing the awareness of good oral health. The frequency of teeth cleansing is one of the behavioral forms that will affect oral health condition, influence caries risk, and periodontal disease.¹

Toothbrushing and other mechanical steps are the simplest and the most effective behavior to

maintain good oral health, which is still the most efficient way to have a good oral health.³

Retention and longlife of microorganisms on toothbrush could cause recontamination from mouth. Toothbrush used regularly is contaminated by microorganisms that invade oral cavity, and the longer its use, the higher amount of microorganisms could be harbored on toothbrush. Research in Manchester University showed that more than 100 million bacteria could be found in one toothbrush, such as *E.coli*, *Staphylococci*, *Streptococcus* and *Candida*.⁴

When keep more than one toothbrush, they need to be separated so the microorganisms will not contaminate one another. Microorganism found in the environment could also exist on the toothbrushes. Toothbrush may be contaminated by bacteria from a toothbrush box, because it is not always in sterile, but human body is continuously in a risk to be invaded by microba and the body has a system to protect against the microba and avoid the infection.⁵

There is no clinical fact of the toothbrush on the harbor of microorganisms on used toothbrushes. Toothbrush should be replaced when the condition of bristles is already wave out, which is an indicator of replacing one toothbrush. The way of brushing tooth and keeping the toothbrush may influence the using time of toothbrush.

Toothbrush is used in daily life by everyone in the world, therefore it needs to be cleaned to avoid the microorganisms that could cause various diseases.⁴² The objective of this study is to evaluate microorganisms on used toothbrushes.

MATERIALS AND METHODS

This is an experimental study using 25 toothbrushes as samples, which 10 toothbrushes have been used less than 3 months, 10 have been used between 3-6 months, and the other 5 have been used more than 6 months.

The samples of this study were used toothbrushes, chocolate bottle, small needle, asepspread glass, incubator, gloves, mask and microscope to observe bacteria, saline, and BHIA. The test was conducted with the plantation on

BHIA medium. The grown bacteria, is taken to the gram coloring test.

RESULTS

This study is conducted in Microbiology Laboratory, Faculty of Dentistry, Hasanuddin University. Microorganisms found on the plantation with BHIA medium test and coloring test, are in coccus form (Fig.1).

Table 1 showed the toothbrushes that have been used for more than 6 months had more microorganisms 579.4 (40.97%) compared to the toothbrushes that have been used for less than 3 months and between 3-6 months.

Table 2 showed of 25 used toothbrushes, Staphylococcus could be isolated from those 25 toothbrushes, followed by Streptococcus found on 22 toothbrushes and the least bacteria isolated is Diplococcus found on 8 toothbrushes.

DISCUSSION

Those three microorganisms identified on the samples, of used toothbrushes, are coccus gram positive bacteria. They are Streptococcus, Staphylococcus, and Diplococcus, which is able to grow on the prepared medium, BHIA.

Table 1. The average number of colonies by the duration of the used of toothbrush

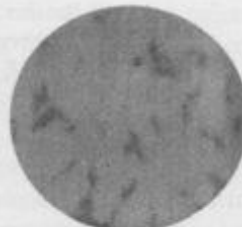
Duration	Average Number Of Colonies	(%)	Colonies
<3 month	147.6	20.87%	Staphylococcus, Streptococcus and Diplococcus
3-6 month	269.8	38.16%	Staphylococcus, Streptococcus and Diplococcus
>6 month	579.4	40.97%	Staphylococcus, Streptococcus and Diplococcus

Table 2. Type of coccus gram positive microorganisms which can be identified from the 25 used toothbrushes.

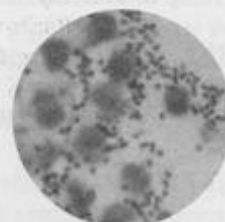
Toothbrush	Microorganism genus		
	Staphylococcus	Streptococcus	Diplococcus
25	V		
22		/	V
8			V



Streptococcus



Staphylococcus



Diplococcus

Fig. 1. Bacteria type (Source: www.infogigi.com/info-gigi/)

The used toothbrush could cause reinfection of an individu. The toothbrush used regularly will be contaminated by microorganisms that invade the oral cavity, thus the longer time of used toothbrush, the more of microorganism on it.⁸

The increased amount of microorganisms may be caused by improper storage, such as keep the toothbrush in humid bathroom, that will cause microorganisms growth more rapidly.⁵

In addition, toothbrush box that also influence the microorganism growth such as stored without hanging, causes the water is still maintained on the toothbrush that will increase the amount of microorganisms. Wet environment will make easier for microorganism to stick and remain there for long time.⁵

In this study, Staphylococcus found on the toothbrush is the normal flora of human skin. This is relevance with the fact that most people use finger to clean their toothbrush. Streptococcus is the most dominant microorganism found in mouth or on the toothbrush right after brushing. But after a while, a small amount readily of Streptococcus is also found, which is caused by their inability to remain on the toothbrush.

Streptococcus is found on all toothbrushes, but after being dried out for 24 hours, Streptococcus is only found on a few toothbrushes. Diplococcus is also found on toothbrushes with a bad storage system causing the toothbrush is contaminated with air.⁹

In this study, it was found that the amount of bacteria increased on toothbrush was related to the using time of toothbrush, therefore it is suggested to replace the toothbrush after 3 months used.¹⁰

CONCLUSION

The longer using time of toothbrush the more microorganisms will be found on toothbrush. The toothbrush that has been used for 6 months has more microorganisms compared to toothbrush that has been used less than 3 months and between 3-6 months.

SUGGESTION

From the result of this research, it is suggested to do further research to identify

another microorganism in toothbrush by using another media, not just limited to coccus gram positive bacteria, and it is important to control other variables such as toothbrush brand and restorage system. So, it is important to replace toothbrush every 3 months.

ACKNOWLEDGEMENT

The author appreciate very much to Afrianti and Dian Permana for their support to complete this study in collecting data at Laboratory of Oral Biology Faculty of Dentistry Hasanuddin University.

REFERENCES

1. Stoll FA. Dental health education. 5th Ed. Philadelphia: Lea & Febiger; 2000. p. 31-5.
2. McGuire. Tooth fitness your guide to healthy teeth. Nevada: St. Michaels Press; 2001. p. 126-8.
3. Das UM, Singhal P. Tooth brushing skills for the children aged 3-11 years. *J Indian Soc Pedod Prev Dent* 2009; 27: 104-7.
4. Wetzel WE, Schaumburg C. Microbial contamination of toothbrush with different principles of filament anchoring. *J Am Dent Assoc* 2005; 136 (6): 758-65.
5. Szhicgoleit A, Kroeger T. Toothbrush care, cleaning and replacement. *J Am Dent Assoc* 2006; 137-8.
6. Hagan PP, Sherill CA. Home oral hygiene for the child and adolescent. In: Donna SS, editor. *Dentistry for the child and adolescent*. 5th Ed. St. Louis Mosby Inc.; 2002. p. 264-7.
7. Finegold SM, Rosenblatt JE. Oral anaerobic infections. In: Baird AT, editor. *Scope monograph on anaerobic infectious*. 3rd Ed. The Upjohn Co.; 2003. p. 118-25.
8. McDonald RE, Avery DR. Natural protective mechanism of the mouth.: Donna SS, editor. *Dentistry for the child and adolescent*. 5th Ed. St. Louis Mosby Inc.; 2002. p. 254-9.
9. Munksgaard. Prevention of bacteria induced inflamatory periodontal diseases. In: Goran K, Sven P, editor. *Pediatric dentistry*. 5th Ed. Copenhagen; 2001. p. 247-8.
10. Bastian RJ. The cleaning efficiency of different toothbrushes in children. *J Clin Periodontol* 2003; 13: 837-40.