

## V. KESIMPULAN DAN SARAN

### A. Kesimpulan

Berdasarkan hasil penelitian dapat diambil kesimpulan:

1. Nanopartikel silikon dioksida (SiO<sub>2</sub>) konsentrasi 1,5%, 2% dan 2,5 % sebagai *coating* pada basis gigi tiruan resin akrilik berpengaruh menurunkan sudut kontak permukaan dan perlekatan *Candida albicans*.
2. Terdapat hubungan antara sudut kontak permukaan dan perlekatan *Candida albicans* pada permukaan basis gigi tiruan resin akrilik.

### B. Saran

Perlu dilakukan uji *Scanning Electron Microscope* (SEM) untuk melihat apakah permukaan resin akrilik telah terlapisi oleh nanopartikel silikon dioksida.

## DAFTAR PUSTAKA

- Akiba, N., Azuma, A., Minakuchi, S., (2012) Hydrophilic surface modification of acrylic denture base material by silica coating and its influence on *Candida albicans* adherence. *J.Med.Dent.Sci.* 59:1-7.
- AlBin-Ameer, M.A., Alsrheed, M.Y., Aldukhi, I.A., Matin, A., Khan, S.Q., Abualsaud, R., (2020) Effect of Protective Coating on Surface Properties and *Candida albicans* Adhesion to Denture Base Materials. *Journal of Prosthodontics.* 29: 80-86.
- Al-Muthafeer., Azad, M.R., Shatha, S. Al-Ameer., (2012) Effect of Thermocycling on some Mechanical Properties of Polyamide Hypoallergenic Dentur Base Material (Comparative Study). *J Bagh College Dentistry.* 24(2):
- Alnamel , H.A., Mudhaffer, M., (2014) The effect of silicon dioxide nano-fillers reinforcement on some properties of heat cure polymethyl methacrylate denture base material. *J Bach College Dentistry.* 26(1): 32.
- Amano., Daichi., Takayuki, U., Sugiyama, T., Takemoto, S., Oda, Y., Sakurai, K., (2010) Improved Brushing Durability of Titanium Dioxide Coating on Polymethylmethacrylate Substrate by Prior Treatment with Acryloxypropyl Trimethoxysilane-Based Agent for Denture Application. *Dent. Mater. J.* 29(1): 97-103.
- Anusavice, K.J., Shen, C., Rawls, H.P., (2013) *Phillips' Science Of Dental Materials.* 12th ed. USA: Elsevier Saunders.
- Azuma, A., Akiba, N., dan Minakuchi, S., (2012) Hydrophilic surface modification of acrylic denture base material by silica coating and its influence on *Candida albicans* adherence, *J. Med. Dent. Sci.* 59:1-7.
- Braden, M., Wright, P.S., Parker, S., (1995) Soft Lining Materials - a Review. *Euro J Prosthodont Restor Dent.* 3(4): 163–174.
- Buahom, P., (2018) *Measuring the Contact Angle using ImageJ with Contact Angle plug-in.*
- Carr, A.B., Brown, D.T., (2011) *McCracken's removable partial prosthodontics.* 12th ed. Missouri: Elsevier. 386-93.
- Cevik, P., Yildirim-Bicer, A.Z., (2016) The effect of silica and prepolymer nanoparticles on the mechanical properties of denture base acrylic resin. Ankara. *Journal of Prosthodontics.* 1-8.
- Combe, E.C., (1992) *Sari Dental Material.* Alih bahasa: Slamet Tarigan. Jakarta. Balai Pustaka.

- Craig, R.G, Power, J.M., (2006) *Restorative Dental Material*, Mosby Inc, St.Louis, 636-49.
- Elshereksi, N.W., (2014) Perspectives for Titanium-Derived Fillers Usage on Denture Base Composite Construction: A Review Article, *Adv Mat Sci Eng*, 1-13.
- Goyal, S., (2006) Silanes : Chemistry and application, *J. Indian Prosthodont. Soc.* 6(1): 14-18.
- Gunawan, G.R.N., IsmiyatI, T., Dipoyono, H.M., 2019 Pengaruh Konsentrasi Lapisan Nano Silika dalam Mengurangi Sitotoksisitas Gigi Tiruan Resin Akrilik. *Majalah Kedokteran Gigi.* 5(3).
- Hatrack, C.D, Eakle, W.S., (2016) *Dental material clinical applications for dental assistants and dental hygienist*, 3rd ed. Missouri: Mosby Elsevier. 301-7.
- Hebbar, R.S., Isloor, A.M., Ismail, A.F., (2017) *Contact Angle Measurements.* Elsevier. 244.
- Hidayati, M., (2012) Pengaruh Ekstrak Daun Sisik Naga (*Drymoglossum pilloselloides [L.] Presl.*) Sebagai Bahan Pembersih Gigi Tiruan Terhadap Pertumbuhan *Candida albicans* Pada Resin Akrilik Heat Cure. Skripsi. FKG Universitas Jember: Jember.
- Hirasawa, M., Tsutsumi-Arai, C., Takakusaki, K., Oya, T., Fueki, K., Wakabayashi, N., (2018) Superhydrophilic co-polymer coatings on denture surfaces reduce *Candida albicans* adhesion-an in vitro study. *Arch Oral Biol.* 87:143-50.
- Ihab, N.S., Moudhaffar, M., (2011) Evaluation the effect of modified nano-filler addition on some properties of heat cured acrylic denture base material, *J Bagh College Dentistry*, 23(3): 23 – 9.
- Irnawati, D., Sunarintyas, S., (2000) Hubungan Antara Tegangan Permukaan Resin Akrilik dan Jumlah Pelikel Yang Teradsorpsi. *Jurnal Kedokteran Gigi Universitas Indonesia.* 7; 121-6.
- Jawetz., Melnick & Adelberg., (2007) *Mikrobiologi Kedokteran*, ed 23. Terjemahan oleh Edi Nugroho, RF Maulany dari Medical Microbiology. Jakarta: EGC.
- Koudi, M.S., Patil, S.B., (2007) *Dental Material Prep Manual for Undergraduates.* Kundli: Elsevier: 57-77.
- Liu, Y.M., Wu, Z.Q., Bao, S., Guo, W.H., Li, D.W., He, J., Zeng, X.B., Huang, L.J., Lu, Q.Q., Guo, Y.Z., Chen, R.Q., Ye, Y.J., Zhang, C.Y., Deng, X.D., dan Yin, D.C., (2020) The Possibility of Changing the Wettability of Material Surface by Adjusting Gravity, *Researc.* 1-11.

- Luhrs, A.K., Geurtsen, W., (2009) The application of silicon and silicates in dentistry: a review, *Prog. Mol. Subcell. Biol.* 47: 359.
- Lung, C. Y. K., dan Matinlinna J. P., (2012) Aspects of silanes coupling agents and surface conditioning in dentistry: an overview. *J.Dental Materials.* 28: 416.
- Maharani, A.S., Aditama, P., Indrastuti, M., Saleh, S., (2021) Effect of Silica Coating in Acrylic Artificial Teeth on Surface Roughness, Contact Angle, and Growth of *Streptococcus Mutans*. *Odonto Dental Journal.* 8(2).
- Manappallil, J.J., (2010) *Basic dental materials.* 3rd ed. New Delhi: Jaypee Brothers Medical Publishers, 13. 381-408.
- Marmur, A., Volpe, C.D., Siboni, S., Amirfazli, A., dan Drelich, J. W., (2017) Contact Angles and Wettability: Towards Common and Accurate Terminology, *Surface Innovation.* 5(1): 3-8.
- Martinez Perez, A., Vera Cardenas, E.E., Luna Barcenas, G., Perez Robles, J.F., Mauricio Sanchez, R.A., (2020). Characterization and sliding wear performance of PMMA reinforced with SiO<sub>2</sub> nanoparticles. *Journal of Thermoplastic Composite Materials.* 33, 867 - 881.
- Mutiawati, V.K., (2016) Pemeriksaan Mikrobiologi pada *Candida albicans*, *Jurnal Kedokteran Syahkuala.* 16(1): 53-63.
- Nagy, N., (2019) Contact Angle Determination on Hydrophilic and Superhydrophilic Surfaces by Using  $r-\theta$ -Type Capillary Bridges. *ACS.* 35(15): 5202-12.
- Nurfajrina, F.R., Nur'aeny, N., Herawati, E., Malinda, Y., (2020) Jumlah Koloni *Candida Albicans* Pada Penderita Hipertensi Dan Non Hipertensi Dengan Coated Tongue. *B-Dent.* 7(1): 48-57.
- Oktaria, I., (2022) Gingivectomy Prevention and Management of Denture Stomatitis. *IJKG.* 18(2): 67-73.
- Parnaadji, R.P., P. Pudjiastuti., dan Kristiani, Dewi., (2003) Pengaruh Ekstrak Rimpang Jahe Sunti Sebagai Bahan Pembersih Gigi Tiruan Akrilik Terhadap Jumlah *Candida albicans* dan Kekuatan Transversal. *Penelitian Dosen Muda FKG Universitas Jember.*
- Polloth, C.F., (2012) The toxicological mode of action and the safety of synthetic amorphous silica—A nanostructured material. *Toxicology.* 294: 61-79.
- Poulopoulos, A., Belazi, M., Epivatianas, A., Velegraki, A., & Antoniadis, D., (2007) The Role of *Candida* in Inflammatori Papillary Hyperplasia of The Palate. *J OralRehabil,* (34): 685-92.

- Prasetyo, M.T., Berahim, H., Haryono, T., (2012) Pengujian Sudut Kontak pada Bahan Isolasi Resin Epoksi dengan Pengisi Pasir Pantai yang Mengandung Banyak Kalsium. *Media Elekrika*, 5(1).
- Rahn, A.O, Ivanhoe, J,R, Plummer, K.D., (2009) *Textbook of complete dentures*. 6th ed. Kanada: People's Medical Publishing House Shelton, 102-22.
- Rickman, L.J., Padipatvthikul, P., Satterthwaite, J.D., (2012) Contemporary denture base resins part 1. *Dent Update*. 39: 25-30.
- Rifdayanti, G.U., Arya, I.W., Sukmana, B.I., (2019) Pengaruh Perendaman Ekstrak Batang Pisang Mauli 25% dan Daun Kemangi 12,5% Terhadap Nilai Kekasaran Permukaan. *Dentin (Jur. Ked. Gigi)*. 3(3): 75-81.
- Sakaguchi, R., Ferracane, J., Powers, J., (2018) *Craig's Restorative Dental Materials*. 14th ed. St.Louis: Elsevier. 136-54.
- Samarayanake, L., (2012) *Essential Microbiology for Dentistry, 4th ed*. London: Churchill Livingstone.
- Sardi, J.C.O., (2016) *Candida species: current epidemiology, pathogenicity, biofilm formation, natural antifungal products and new therapeutic options*. *Journal of Medical Microbiology*. 62(1):10–24.
- Shetty, S., Kamat, G., dan Shetty, R., (2013) Wettability Changes in Polyether Impression Materials Subjected to Immersion Disinfection, *Dent Res J*. 10(4):539-544.
- Shin-etsu., (2017). *Silane Coupling Agent*, Shin-Etsu Chemical Co., Ltd., Tokyo, Japan. 1-28.
- Silva, R.V.D.R., Costa, M.I., Jarros, I.C., Del Bel Curry, A.A., Sidhu, S.K., Negri, M., Pascotto, R.C., (2020) Effect of Silicon dioxide coating of acrylic resin surfaces on *Candida albicans* adhesion. *Braz. Oral Res*. 34.
- Soenartyo, H., (2000) Denture Stomatitis: Penyebab dan Pengelolaannya. *Maj Ked Gigi ( Dent J)*. 33(4): 148-151.
- Song, R., Fiao, X., Long, L., (2011) Improvement of Mechanical and Antimicrobial Properties of Denture Base Resin by Nano-Titanium Dioxide and Nano Silicon Dioxide Particles. *Pigmen and Resin Technology*. 40(6): 393-4.
- Suguh, B.P., Yogihartono, M., Titien, H.A., (2010) Perubahan Kekuatan Impak Resin Akrilik Polimerisasi Panas dalam Perendaman Larutan Cuka Apel. *Dentofacial J*. 9(1): 13-20.
- Sujitha, K ., Bharathi, M., Lakshminarayana, S., Shareef, A., Lavanya, B., SivKumar, V., (2018) Physical properties of heat cure denture base resin after incorporation of methacrylic acid. *Contemp Clin Dent*. 9:251-5.

- Tandon, R., Gupta, S., Agarwal, S.K., (2010) Denture Base Materials: From Past to Future. Department of Prosthodontics & Dental Material Sciences, *Kothiwal Dental College and Research Centre*. 33-8.
- Tjampakasari, S., (2006) *Karakteristik Candida albicans*. Jakarta: Bagian Mikrobiologi Fakultas Kedokteran Universitas Indonesia.
- Tsuji, M., Ueda, T., Sawaki, K., Kawaguchi, M., Sakurai, K., (2016) Biocompatibility of Titanium Dioxide Coating Method for Denture Base Acrylic Resin. *J. Gerodont*. 33: 539-544.
- Van Noort, R., (2007) *Introduction to Dental Materials*, 3rd ed. London: Mosby. 62- 63, 216-25.
- Veeraiyan, D.N., (2017) *Textbook of prosthodontics*. 2nd ed. New Delhi: Jaypee Brothers Medical Publishers. 5-6.
- Yodmongkol, S., Chantaracindawong, R., Thaweboon, S., (2014) films on *Candida albicans* adhesion and the surface and physical properties of acrylic resin denture base material. *The J Prost Dent*. 1-6.
- Yoshijama Y., Murakami K., Kayama S., et al., (2010) Effect of substrate surface hydrophobicity on the adherence of yeast and hyphal *Candida*. *Mycoses*. 53: 221-6.
- Yoshizaki, T., Akiba, N., Inokoshi, M., Shimada, M., Minakuchi, S., (2017) Hydrophilic nano-silica coating agents with platinum and diamond nanoparticles for denture plate materials. *Dent Mater J*. 36(3): 333-9.
- Zayed, S.M., Alshimy, A.M., Fahmy, A.E., (2014) Effect of Surface Treated Silicon Dioxide Nanoparticles on Some Mechanical Properties of Maxillofacial Silicone Elastomer, *International Journal of Biomaterials*.