

## DAFTAR PUSTAKA

- Abruzzo, Angela, Federica Bigucci, Teresa Cerchiara, Federica Cruciani, Beatrice Vitali, and Barbara Luppi. 2012. "Mucoadhesive Chitosan/gelatin Films for Buccal Delivery of Propranolol Hydrochloride." *Carbohydrate Polymers* 87 (1). Elsevier Ltd.: 581–88.
- Adhikari, Surya Narayan Ratna, and Satyabrata Panda. 2017. "Buccal Patches of Atenolol Formulated Using Fenugreek ( *Trigonella Foenum-Graecum* L . ) Seed Mucilage." *Polymers in Medicine* 47 (1): 5–11.
- Aktas, Yesim, Karine Andrieux, Maria Jose, Pilar Calvo, Patrick Couvreur, and C Yılmaz. 2005. "Preparation and in Vitro Evaluation of Chitosan Nanoparticles Containing a Caspase Inhibitor." *International Journal of Pharmaceutics* 298: 378–83.
- Alving, Carl R., Kristina K. Peachman, Mangala Rao, and Steven G Reed. 2012. "Adjuvants for Human Vaccines." *Current Opinion in Immunology* 24 (3): 310–15.
- Ana, Ika Dewi, Shigeki Matsuya, and Kunio Ishikawa. 2010. "Engineering of Carbonate Apatite Bone Substitute Based on Composition-Transformation of Gypsum and Calcium Hydroxide." *Engineering* 2010 (May): 344–52.
- Andorko, James I., Lisa H. Tostanoski, Eduardo Solano, Maryam Mukhamedova, and Christopher M. Jewell. 2014. "Intra-Lymph Node Injection of Biodegradable Polymer Particles." *Journal of Visualized Experiments*, no. 83: 1–7.
- Appledorn, Daniel M, Yasser a Aldhamen, Sarah Godbehere, Sergey S Seregin, and Andrea Amalfitano. 2011. "Sublingual Administration of an Adenovirus Serotype 5 (Ad5)-Based Vaccine Confirms Toll-like Receptor Agonist Activity in the Oral Cavity and Elicits Improved Mucosal and Systemic Cell-Mediated Responses against HIV Antigens despite Preexisting Ad5 Immuni." *Clinical and Vaccine Immunology : CVI* 18 (1): 150–60.
- Aramwit, Pornanong, Nungruthai Jaichawa, Juthamas Ratanavaraporn, and Teerapol Srichana. 2015. "A Comparative Study of Type A and Type B Gelatin Nanoparticles as the Controlled Release Carriers for Different Model Compounds." *Materials Express* 5 (3): 241–48.
- Arcos, Daniel, and Maria Vallet-Regi. 2013. "Bioceramics for Drug Delivery." *Acta Materialia* 61: 890–911.
- Arifin, Wan Nor, and Wan Mohd Zahiruddin. 2017. "Sample Size Calculation in Animal Studies Using Resource Equation Approach." *The Malaysian Journal of Medical Science* 24 (5): 101–5.
- Awate, Sunita, Lorne A Babiuk, and George Mutwiri. 2013. "Mechanisms of

Action of Adjuvants.” *Frontiers in Immunology* 4 (May): 1–10.

Barralet, J.E., S. Aldred, A.J. Wright, and A. Coombes. 2002. “In Vitro Behavior of Albumin-Loaded Carbonate Hydroxyapatite Gel.” *Journal of Biomedical Materials Research* 60 (3): 360–67.

Boddupalli, BinduM, ZulkarN.K Mohammed, RavinderA Nath, and David Banji. 2010. “Mucoadhesive Drug Delivery System: An Overview.” *Journal of Advanced Pharmaceutical Technology & Research* 1 (4): 381. doi:10.4103/0110-5558.76436.

Borde, Annika, Annelie Ekman, Jan Holmgren, and Anette Larsson. 2012. “Effect of Protein Release Rates from Tablet Formulations on the Immune Response after Sublingual Immunization.” *European Journal of Pharmaceutical Sciences* 47 (4). Elsevier B.V.: 695–700. doi:10.1016/j.ejps.2012.08.014.

Cesta, Mark F. 2006. “Normal Structure , Function , and Histology of Mucosa-Associated Lymphoid Tissue.” *Toxicologic Pathology* 35: 599–608. doi:10.1080/01926230600865531.

Chadwick, Sandra, Christina Kriegel, and Mansoor Amiji. 2010. “Nanotechnology Solutions for Mucosal Immunization.” *Advanced Drug Delivery Reviews* 62 (4-5). Elsevier B.V.: 394–407. doi:10.1016/j.addr.2009.11.012.

Charan, Jaykaran, and N D Kantharia. 2013. “How to Calculate Sample Size in Animal Studies ?” *Journal of Pharmacology and Pharmacotherapeutics* 4 (4): 303–6. doi:10.4103/0976-500X.119726.

Chen, Kang, and Andrea Cerutti. 2010. “Vaccination Strategies to Promote Mucosal Antibody Responses.” *Immunity* 33 (4). Elsevier Inc.: 479–91. doi:10.1016/j.immuni.2010.09.013.

Chen, Wangxue, Girishchandra B. Patel, Hongbin Yan, and Jianbing Zhang. 2010. “Recent Advances in the Development of Novel Mucosal Adjuvants and Antigen Delivery Systems.” *Human Vaccines* 6 (9): 706–14. doi:10.4161/hv.6.9.11561.

Choi, Jeom-il, and Gregory J Seymour. 2010. “Vaccines against Periodontitis : A Forward-Looking Review.” *J Periodontal Implant Sci* 40: 153–63. doi:10.5051/jpis.2010.40.4.153.

Chowdhury, E H, and Toshihiro Akaike. 2005. “pH-Sensitive Nano-Crystals of Carbonate Apatite Regulate Delivery and Release Kinetics of DNA for Efficient Expression in Mammalian Cells Generation and Chemical Characterization of High Rate Cellular Uptake of DNA Intracellular Crystal Dissolution and DN.” In *NSTI-Nanotech 2005*, 1:1–4.

Chowdhury, Ezharul Hoque. 2013. “pH-Responsive Magnesium- and Carbonate-

Substituted Apatite Nano-Crystals for Efficient and Cell-Targeted Delivery of Transgenes.” *Open Journal of Genetics* 03 (02): 38–44. doi:10.4236/ojgen.2013.32A1005.

Chowdury, E.H., and Toshihiro Akaike. 2007. “High Performance DNA Nano-Carriers of Carbonate Apatite : Multiple Factors in Regulation of Particle Synthesis and Transfection Efficiency.” *International Journal of Nanomedicine* 2 (1): 101–6.

Coffman, Robert L, Alan Sher, and Robert A Seder. 2010. “Review Vaccine Adjuvants : Putting Innate Immunity to Work.” *Immunity* 33 (4). Elsevier Inc.: 492–503. doi:10.1016/j.immuni.2010.10.002.

Combes, Christèle, Sophie Cazalbou, and Christian Rey. 2016. “Apatite Biominerals.” *Minerals* 6 (34): 1–25. doi:10.3390/min6020034.

Cuburu, Nicolas, Mi-Na Kweon, Catherine Hervouet, Hye-Ran Cha, Yuk-Ying S Pang, Jan Holmgren, Konrad Stadler, John T Schiller, Fabienne Anjuère, and Cecil Czerkinsky. 2009. “Sublingual Immunization with Nonreplicating Antigens Induces Antibody-Forming Cells and Cytotoxic T Cells in the Female Genital Tract Mucosa and Protects against Genital Papillomavirus Infection.” *Journal of Immunology (Baltimore, Md. : 1950)* 183 (12): 7851–59. doi:10.4049/jimmunol.0803740.

Cui, Zhengrong, and Russell J Mumper. 2002. “Bilayer Films for Mucosal ( Genetic ) Immunization via the Buccal Route in Rabbits.” *Pharmaceutical Research* 19 (7): 0–6.

de Gregorio, Elena Caproni, and Jeffrey B Ulmer. 2013. “Vaccine Adjuvants : Mode of Action.” *Frontiers in Immunology* 4 (July): 1–6. doi:10.3389/fimmu.2013.00214.

Dorozhkin, Sergey V. 2009. “Nanodimensional and Nanocrystalline Apatites and Other Calcium Orthophosphates in Biomedical Engineering, Biology and Medicine.” *Materials* 2 (4): 1975–2045. doi:10.3390/ma2041975.

Fan, Wen, Wei Yan, Zushun Xu, and Hong Ni. 2012. “Formation Mechanism of Monodisperse, Low Molecular Weight Chitosan Nanoparticles by Ionic Gelation Technique.” *Colloids and Surfaces B: Biointerfaces* 90 (1). Elsevier B.V.: 21–27. doi:10.1016/j.colsurfb.2011.09.042.

Fleet, Michael E., Xiaoyang Liu, and Penelope L. King. 2004. “Accommodation of the Carbonate Ion in Apatite: An FTIR and X-Ray Structure Study of Crystals Synthesized at 2-4 GPa.” *American Mineralogist* 89 (10): 1422–32.

Gambhir, Ramandeep, Simarpreet Singh, Gurminder Singh, Rina Singh, Tarun Nanda, and Heena Kakar. 2012. “Vaccine against Dental Caries- An Urgent Need.” *Journal of Vaccines & Vaccination* 03 (02): 136. doi:10.4172/2157-7560.1000136.

- Grdadolnik, Joze. 2003. "Saturation Effects in FTIR Spectroscopy : Intensity of Amide I and Amide II Bands in Protein Spectra." *Acta Chimica Slovenica* 50 (December 2003): 777–88.
- Griffin, Susan O, Laurie K. Barker, Liang Wei, Chien-Hsun Li, Melissa S. Albuquerque, and Barbara F. Gooch. 2014. "Use of Dental Care and Effective Preventive Services in Preventing Tooth Decay Among U.S. Children and Adolescents - Medical Expenditure Panel Survey, United States, 2003-2009 and National Health and Nutrition Examination Survey, United States, 2005-2010." *Morbidity and Mortality Weekly Report* 63 (2): 54–60.
- Guo, Jian-Hwa. 1994. "Bioadhesive Polymer Buccal Patches for Buprenorphine Controlled Delivery: Formulation, In-Vitro Adhesion and Release Properties." *Drug Development and Industrial Pharmacy* 20 (18): 2809–21.
- Hebishima, T., E. Yuba, K. Kono, S.-n. Takeshima, Y. Ito, and Y. Aida. 2012. "The pH-Sensitive Fusogenic 3-Methyl-Glutarylated Hyperbranched Poly(Glycidol)-Conjugated Liposome Induces Antigen-Specific Cellular and Humoral Immunity." *Clinical and Vaccine Immunology* 19 (9): 1492–98. doi:10.1128/CVI.00273-12.
- Hebishima, Takehisa, Seiichi Tada, Shin-nosuke Takeshima, Toshihiro Akaike, Yoshihiro Ito, and Yoko Aida. 2011. "Induction of Antigen-Specific Immunity by pH-Sensitive Carbonate Apatite as a Potent Vaccine Carrier." *Biochemical and Biophysical Research Communications* 415 (4). Elsevier Inc.: 597–601. doi:10.1016/j.bbrc.2011.10.114.
- Holmgren, Jan, and Cecil Czerkinsky. 2005. "Mucosal Immunity and Vaccines." *Nature Medicine* 11 (4 Suppl): S45–53. doi:10.1038/nm1213.
- Hovav, A-H. 2014. "Dendritic Cells of the Oral Mucosa." *Mucosal Immunology* 7 (1). Nature Publishing Group: 27–37. doi:10.1038/mi.2013.42.
- IUPAC. 1997. *Compendium of Chemical Terminology (the "Gold Book")*. Edited by A. D. McNaught and A. Wilkinson. 2nd ed. Oxford: Blackwell Scientific Publications.
- Jones, Owen G, Eric A Decker, and David Julian McClements. 2010. "Journal of Colloid and Interface Science Comparison of Protein – Polysaccharide Nanoparticle Fabrication Methods : Impact of Biopolymer Complexation before or after Particle Formation." *Journal of Colloid And Interface Science* 344 (1). Elsevier Inc.: 21–29. doi:10.1016/j.jcis.2009.12.017.
- Kassebaum, N J, E Bernabé, M Dahiya, B Bhandari, C J L Murray, and W Marcenes. 2015. "Global Burden of Untreated Caries : A Systematic Review and Metaregression." *Journal of Dental Research* 94 (5): 650–58. doi:10.1177/0022034515573272.

- Kraan, Heleen, Hilde Vrieling, Cecil Czerkinsky, Wim Jiskoot, Gideon Kersten, and Jean Pierre Amorij. 2014. "Buccal and Sublingual Vaccine Delivery." *Journal of Controlled Release* 190. Elsevier B.V.: 580–92. doi:10.1016/j.jconrel.2014.05.060.
- Lamichhane, Aayam, Tatsuhiko Azegami, and Hiroshi Kiyono. 2014. "The Mucosal Immune System for Vaccine Development." *Vaccine* 32 (49). Elsevier Ltd: 6711–23. doi:10.1016/j.vaccine.2014.08.089.
- Lindblad, Erik B. 2004. "Aluminium Compounds for Use in Vaccines." *Immunology and Cell Biology* 82: 497–505. doi:10.1111/j.1440-1711.2004.01286.x.
- Madsen, Katrine D, Camilla Sander, Stefania Baldursdottir, Anne Marie, L Pedersen, and Jette Jacobsen. 2013. "Development of an Ex Vivo Retention Model Simulating Bioadhesion in the Oral Cavity Using Human Saliva and Physiologically Relevant Irrigation Media." *International Journal of Pharmaceutics* 448 (2). Elsevier B.V.: 373–81. doi:10.1016/j.ijpharm.2013.03.031.
- Matsumoto, T, M Okazaki, M Inoue, S Yamaguchi, T Kusunose, and T Toyonaga. 2004. "Hydroxyapatite Particles as a Controlled Release Carrier of Protein." *Biomaterials* 25: 3807–12. doi:10.1016/j.biomaterials.2003.10.081.
- Miyazaki, S., A. Nakayama, M. Oda, M. Takada, and D. Attwood. 1995. "Drug Release from Oral Mucosal Adhesive Tablets of Chitosan and Sodium Alginate." *International Journal of Pharmaceutics* 118: 257–63.
- Moorthi, C, Kiran Krishnan, R Manavalan, and K Kathiresan. 2012. "Preparation and Characterization of Curcumin-Piperine Dual Drug Loaded Nanoparticles." *Asian Pacific Journal of Tropical Biomedicine* 2 (11): 841–48. doi:10.1016/S2221-1691(12)60241-X.
- Morales, Javier O, and Jason T McConville. 2011. "Manufacture and Characterization of Mucoadhesive Buccal Films." *European Journal of Pharmaceutics and Biopharmaceutics* 77 (2). Elsevier B.V.: 187–99. doi:10.1016/j.ejpb.2010.11.023.
- Murphy, Kenneth. 2012. *Janeway's Immunobiology*. 8th ed. New York: Garland Science.
- Nagahama, H, H Maeda, T Kashiki, R Jayakumar, T Furuike, and H Tamura. 2009. "Preparation and Characterization of Novel Chitosan/gelatin Membranes Using Chitosan Hydrogel." *Carbohydrate Polymers* 76 (2). Elsevier Ltd: 255–60. doi:10.1016/j.carbpol.2008.10.015.
- Nair, Anroop B, Rachna Kumria, Sree Harsha, Mahesh Attimarad, Bandar E Al-dhubiab, and Ibrahim A Alhaider. 2013. "In Vitro Techniques to Evaluate

- Buccal Films.” *Journal of Colloid And Interface Science* 166: 10–21. doi:10.1016/j.jconrel.2012.11.019.
- Nara, Masayuki, Hisayuki Morii, and Masaru Tanokura. 2013. “Coordination to Divalent Cations by Calcium-Binding Proteins Studied by FTIR Spectroscopy.” *Biochimica et Biophysica Acta* 1828 (10). Elsevier B.V.: 2319–27. doi:10.1016/j.bbamem.2012.11.025.
- Needleman, I G, and F C Smales. 1995. “In Vitro Assessment of Bioadhesion for Periodontal and Buccal Drug Delivery.” *Biomaterials* 16 (8): 617–24. doi:10.1016/0142-9612(95)93859-C.
- O’Hagan, Derek T. 2007. “New Generation Vaccine Adjuvants.” *Encyclopedia of Life Sciences*, 1–7. doi:10.1002/9780470015902.a0020177.
- Papadimitriou, Sofia, Dimitrios Bikiaris, Konstantinos Avgoustakis, Evangelos Karavas, and Manolis Georgarakis. 2008. “Chitosan Nanoparticles Loaded with Dorzolamide and Pramipexole.” *Carbohydrate Polymers* 73: 44–54. doi:10.1016/j.carbpol.2007.11.007.
- Peppas, Nikolaos A, and Pierre A Buri. 1985. “Surface, Interfacial and Molecular Aspects of Polymer Bioadhesion on Soft Tissue.” *Journal of Controlled Release* 2: 257–75.
- Petrovsky, Nikolai, and Julio César Aguilar. 2004. “Special Feature Vaccine Adjuvants : Current State and Future Trends.” *Immunology and Cell Biology* 82: 488–96. doi:10.1111/j.1440-1711.2004.01272.x.
- Phantumvanit, Prathip. 2015. “Prevention Is Better than Treatment.” *Bull World Health Organ* 93: 594–95. doi:http://dx.doi.org/10.2471/BLT.15.020915.
- Reddy, R Jagadeeshwar, Maimuna Anjum, and Mohammed Asif Hussain. 2013. “A Comprehensive Review on Buccal Drug Delivery System.” *American Journal of Advanced Drug Delivery* 1 (3): 300–312.
- Reed, Steven G, Sylvie Bertholet, Rhea N Coler, and Martin Friede. 2008. “New Horizons in Adjuvants for Vaccine Development.” *Trends in Immunology* 30 (April): 23–32. doi:10.1016/j.it.2008.09.006.
- Reed, Steven G, Mark T Orr, and Christopher B Fox. 2013. “Key Roles of Adjuvants in Modern Vaccines.” *Nature Medicine* 19 (April): 1597–1608. doi:10.1038/nm.3409.
- Rhee, Joon Haeng, Shee Eun Lee, and Soo Young Kim. 2012. “Mucosal Vaccine Adjuvants Update.” *Clinical and Experimental Vaccine Research* 1 (1): 50–63. doi:10.7774/cevr.2012.1.1.50.
- Romário, Diego, Andréa Cristina, Robeci Macedo Filho, Flaviana Dornela Verli, and Sandra Aparecida Marinho. 2014. “Vaccine against Dental Caries : An

Update,” no. October: 925–33.

Sa, Guoliang, Xuepeng Xiong, Tianfu Wu, Jincheng Yang, Sangang He, and Yifang Zhao. 2015. “Histological Features of Oral Epithelium in Seven Animal Species: As a Reference for Selecting Animal Models.” *PHASCI*. Elsevier B.V. doi:10.1016/j.ejps.2015.09.019.

Salehi, Sahar, and Soheil Boddohi. 2017. “New Formulation and Approach for Mucoadhesive Buccal Film of Rizatriptan Benzoate.” *Progress in Biomaterials* 6 (4). Springer Berlin Heidelberg: 175–87. doi:10.1007/s40204-017-0077-7.

Senel, S., G. Ikinici, S. Kas, A. Yousefi-Rad, M.F. Sargon, and A.A. Hincal. 2000. “Chitosan Films and Hydrogels of Chlorhexidine Gluconate for Oral Mucosal Delivery.” *International Journal of Pharmaceutics* 193: 197–203.

Shanmugam, KT, KMK Masthan, N Balachander, J Sudha, and R Sarangarajan. 2013. “Dental Caries Vaccine – A Possible Option?” *Journal of Clinical and Diagnostic Research* 7 (6): 1250–53. doi:10.7860/JCDR/2013/5246.3053.

Shojaei, Amir H. 1998. “Buccal Mucosa As A Route For Systemic Drug Delivery : A Review.” *J Pharm Pharmaceut Sci* 1 (1): 15–30.

Siegrist, Claire-anne. 2008. “Vaccine Immunology 2.” In *Vaccines*, edited by S A Plotkin, W A Orenstein, and P A Offit, 5th ed., 17–36. Philadelphia: Saunders/Elsevier.

Singh, T E J Pratap, Rakesh Kumar Singh, Jigar N Shah, and Tejal A Mehta. 2014. “Mucoadhesive Bilayer Buccal Patches of Verapamil Hydrochloride : Formulation Development and Characterization.” *International Journal of Pharmacy and Pharmaceutical Sciences* 6 (4): 234–41.

Smart, John D. 2005. “The Basics and Underlying Mechanisms of Mucoadhesion.” *Advanced Drug Delivery Reviews* 57 (11): 1556–68. doi:10.1016/j.addr.2005.07.001.

Smith, Daniel J. 2003. “Caries Vaccines for the Twenty-First Century.” *Journal of Dental Education* 67 (10): 1130–39.

Tada, Seiichi, Ezharul H Chowdhury, Chong-su Cho, and Toshihiro Akaike. 2010. “Biomaterials pH-Sensitive Carbonate Apatite as an Intracellular Protein Transporter.” *Biomaterials* 31 (6). Elsevier Ltd: 1453–59. doi:10.1016/j.biomaterials.2009.10.016.

Tomljenovic, L., and C. Shaw. 2012. “Mechanisms of Aluminum Adjuvant Toxicity and Autoimmunity in Pediatric Populations.” *Lupus* 21 (2): 223–30. doi:10.1177/0961203311430221.

Tritto, Elaine, Flaviana Mosca, and Ennio De Gregorio. 2009. “Mechanism of

- Action of Licensed Vaccine Adjuvants.” *Vaccine* 27: 3331–34.  
doi:10.1016/j.vaccine.2009.01.084.
- Ueno, Y, H Futagawa, Y Takagi, A Ueno, and Y Mizushima. 2005. “Drug-Incorporating Calcium Carbonate Nanoparticles for a New Delivery System.” *Journal of Controlled Release* 103: 93–98.  
doi:10.1016/j.jconrel.2004.11.015.
- Vetchy, David, Hana Landová, Jan Gajdziok, Petr Dolezel, Zdenek Danek, and Jan Stembirek. 2014. “Determination of Dependencies among in Vitro and in Vivo Properties of Prepared Mucoadhesive Buccal Films Using Multivariate Data Analysis.” *European Journal of Pharmaceutics and Biopharmaceutics* 86: 498–506. doi:10.1016/j.ejpb.2013.12.002.
- Viridén, Anna, Bengt Wittgren, and Anette Larsson. 2008. “Investigation of Critical Polymer Properties for Polymer Release and Swelling of HPMC Matrix Tablets.” *European Journal of Pharmaceutical Sciences* 36: 297–309.  
doi:10.1016/j.ejps.2008.10.021.
- Vlierberghe, S Van, G Graulus, S Keshari Samal, I Van Nieuwenhove, and P Dubruel. 2014. *Chapter 12- Porous Hydrogel Biomedical Foam Scaffolds for Tissue Repair*. Edited by Paolo A. Netti. *Biomedical Foams for Tissue Engineering Applications*. Woodhead Publishing Limited.  
doi:10.1533/9780857097033.2.335.
- Zhang, Tao, Tomomi Hashizume, Tomoko Kurita-Ochiai, and Masafumi Yamamoto. 2009. “Sublingual Vaccination with Outer Membrane Protein of Porphyromonas Gingivalis and Flt3 Ligand Elicits Protective Immunity in the Oral Cavity.” *Biochemical and Biophysical Research Communications* 390 (3). Elsevier Inc.: 937–41. doi:10.1016/j.bbrc.2009.10.081.
- Zhang, Zheng, Ophir Ortiz, Ritu Goyal, and Joachim Kohn. 2014. *Chapter 23 – Biodegradable Polymers*. Edited by Robert Lanza, Robert Langer, and Joseph Vacanti. *Principles of Tissue Engineering*. Fourth Ed. Elsevier.  
doi:10.1016/B978-0-12-398358-9.00023-9.
- Zhu, Chunhui, Jin Yang, Junyi Sun, Jianfeng Shi, Jianzhong Gou, and Ang Li. 2013. “Induction of Immune Response and Prevention of Alveolar Bone Loss with Recombinant Porphyromonas Gingivalis Peptidylarginine Deiminase.” *Archives of Oral Biology* 58 (12). Elsevier Ltd: 1777–83.  
doi:10.1016/j.archoralbio.2013.09.006.