

DAFTAR PUSTAKA

- ABREU, A. C., COQUEIRO, A., SULTAN, A. R., LEMMENS, N., KIM, H. K., VERPOORTE, R., VAN WAMEL, W. J. B., SIMOES, M. & CHOI, Y. H. 2017. Looking to nature for a new concept in antimicrobial treatments: isoflavonoids from *Cytisus striatus* as antibiotic adjuvants against MRSA. *Sci Rep*, 7, 3777.
- ALVES, P., GOMES, L. C., VOROBII, M., RODRIGUEZ-EMMENEGGER, C. & MERGULHAO, F. J. 2020. The potential advantages of using a poly(HPMA) brush in urinary catheters: effects on biofilm cells and architecture. *Colloids Surf B Biointerfaces*, 191, 110976.
- ARCHER, N. K., MAZAITIS, M. J., COSTERTON, J. W., LEID, J. G., POWERS, M. E. & SHIRTLIFF, M. E. 2011. *Staphylococcus aureus* biofilms: properties, regulation, and roles in human disease. *Virulence*, 2, 445-59.
- ARCIOLA, C. R., CAMPOCCIA, D., RAVAIOLI, S. & MONTANARO, L. 2015. Polysaccharide intercellular adhesin in biofilm: structural and regulatory aspects. *Front Cell Infect Microbiol*, 5, 7.
- ASHONG, C. N., RAHEEM, S. A., HUNTER, A. S., MINDRU, C. & BARSHEES, N. R. 2017. Methicillin-Resistant *Staphylococcus aureus* in Foot Osteomyelitis. *Surg Infect (Larchmt)*, 18, 143-148.
- BABA, T., TAKEUCHI, F., KURODA, M., YUZAWA, H., AOKI, K., OGUCHI, A., NAGAI, Y., IWAMA, N., ASANO, K., NAIMI, T., KURODA, H., CUI, L., YAMAMOTO, K. & HIRAMATSU, K. 2002. Genome and virulence determinants of high virulence community-acquired MRSA. *Lancet*, 359, 1819-27.
- BEENKEN, K. E., SPENCER, H., GRIFFIN, L. M. & SMELTZER, M. S. 2012. Impact of extracellular nuclease production on the biofilm phenotype of *Staphylococcus aureus* under in vitro and in vivo conditions. *Infect Immun*, 80, 1634-8.
- BELOFSKY, G., CARRENO, R., LEWIS, K., BALL, A., CASADEI, G. & TEGOS, G. P. 2006. Metabolites of the "smoke tree", *Dalea spinosa*, potentiate antibiotic activity against multidrug-resistant *Staphylococcus aureus*. *J Nat Prod*, 69, 261-4.
- BERENDS, E. T., HORSWILL, A. R., HASTE, N. M., MONESTIER, M., NIZET, V. & VON KOCKRITZ-BLICKWEDE, M. 2010. Nuclease expression by *Staphylococcus aureus* facilitates escape from neutrophil extracellular traps. *J Innate Immun*, 2, 576-86.
- BOTELHO, A. M. N., CERQUEIRA E COSTA, M. O., MOUSTAFA, A. M., BELTRAME, C. O., FERREIRA, F. A., CÔRTEZ, M. F., COSTA, B. S. S., SILVA, D. N. S., BANDEIRA, P. T., LIMA, N. C. B., SOUZA, R. C., DE ALMEIDA, L. G. P., VASCONCELOS, A. T. R., NARECHANIA, A., RYAN, C., O'BRIEN, K., KOLOKOTRONIS, S. O., PLANET, P. J., NICOLÁS, M. F. & FIGUEIREDO, A. M. S. 2019. Local diversification of methicillin-resistant *Staphylococcus aureus* ST239 in South America after its rapid worldwide dissemination. *Frontiers in Microbiology*, 10.
- BRIDIER, A., DUBOIS-BRISSONNET, F., BOUBETRA, A., THOMAS, V. & BRIANDET, R. 2010. The biofilm architecture of sixty opportunistic

- pathogens deciphered using a high throughput CLSM method. *J Microbiol Methods*, 82, 64-70.
- BRINKMANN, V., REICHARD, U., GOOSMANN, C., FAULER, B., UHLEMANN, Y., WEISS, D. S., WEINRAUCH, Y. & ZYCHLINSKY, A. 2004. Neutrophil extracellular traps kill bacteria. *Science*, 303, 1532-5.
- BULL, J. J., VEGGE, C. S., SCHMERER, M., CHAUDHRY, W. N. & LEVIN, B. R. 2014. Phenotypic resistance and the dynamics of bacterial escape from phage control. *PLoS One*, 9, e94690.
- BURDET, C., LOUBET, P., LE MOING, V., VINDRIOS, W., ESPOSITO-FARESE, M., LINARD, M., FERRY, T., MASSIAS, L., TATTEVIN, P., WOLFF, M., VANDENESCH, F., GRALL, N., QUINTIN, C., MENTRE, F., DUVAL, X., LESCURE, F. X. & CLOCEBA STUDY, G. 2018. Efficacy of cloxacillin versus cefazolin for methicillin-susceptible *Staphylococcus aureus* bacteraemia (CloCeBa): study protocol for a randomised, controlled, non-inferiority trial. *BMJ Open*, 8, e023151.
- CAMPBELL, E. A., KORZHEVA, N., MUSTAEV, A., MURAKAMI, K., NAIR, S., GOLDFARB, A. & DARST, S. A. 2001. Structural mechanism for rifampicin inhibition of bacterial rna polymerase. *Cell*, 104, 901-12.
- CAMPOCCIA, D., MONTANARO, L. & ARCIOLA, C. R. 2021. Extracellular DNA (eDNA). A Major Ubiquitous Element of the Bacterial Biofilm Architecture. *Int J Mol Sci*, 22.
- CLARDY, J., FISCHBACH, M. A. & WALSH, C. T. 2006. New antibiotics from bacterial natural products. *Nat Biotechnol*, 24, 1541-50.
- CLUZEL, R. A., LOPITAUX, R., SIROT, J. & RAMPON, S. 1984. Rifampicin in the treatment of osteoarticular infections due to staphylococci. *J Antimicrob Chemother*, 13 Suppl C, 23-9.
- CORONA, F. & MARTINEZ, J. L. 2013. Phenotypic Resistance to Antibiotics. *Antibiotics (Basel)*, 2, 237-55.
- CORY, H., PASSARELLI, S., SZETO, J., TAMEZ, M. & MATTEI, J. 2018. The Role of Polyphenols in Human Health and Food Systems: A Mini-Review. *Front Nutr*, 5, 87.
- COSTA, S. S., SOBKOWIAK, B., PARREIRA, R., EDGEWORTH, J. D., VIVEIROS, M., CLARK, T. G. & COUTO, I. 2018. Genetic Diversity of *norA*, Coding for a Main Efflux Pump of *Staphylococcus aureus*. *Front Genet*, 9, 710.
- COWAN, M. M. 1999. Plant products as antimicrobial agents. *Clin Microbiol Rev*, 12, 564-82.
- DE JONG, N. W. M., VAN KESSEL, K. P. M. & VAN STRIJP, J. A. G. 2019. Immune Evasion by *Staphylococcus aureus*. *Microbiology Spectrum*, 7.
- DEN REIJER, P. M., HAISMA, E. M., LEMMENS-DEN TOOM, N. A., WILLEMSE, J., KONING, R. I., DEMMERS, J. A., DEKKERS, D. H., RIJKERS, E., EL GHALBZOURI, A., NIBBERING, P. H. & VAN WAMEL, W. 2016. Correction: Detection of Alpha-Toxin and Other Virulence Factors in Biofilms of *Staphylococcus aureus* on Polystyrene and a Human Epidermal Model. *PLoS One*, 11, e0152544.
- DEN REIJER, P. M., SANDKER, M., SNIJDERS, S. V., TAVAKOL, M., HENDRICKX, A. P. & VAN WAMEL, W. J. 2017. Combining in vitro protein detection and in vivo antibody detection identifies potential

- vaccine targets against *Staphylococcus aureus* during osteomyelitis. *Med Microbiol Immunol*, 206, 11-22.
- DON, M. J., LIN, L. C. & CHIOU, W. F. 2012. Neobavaisoflavone stimulates osteogenesis via p38-mediated up-regulation of transcription factors and osteoid genes expression in MC3T3-E1 cells. *Phytomedicine*, 19, 551-61.
- DONLAN, R. M. 2002. Biofilms: microbial life on surfaces. *Emerg Infect Dis*, 8, 881-90.
- DONLAN, R. M. & COSTERTON, J. W. 2002a. Biofilms: survival mechanisms of clinically relevant microorganisms. *Clin Microbiol Rev*, 15, 167-93.
- DONLAN, R. M. & COSTERTON, J. W. 2002b. Biofilms: Survival mechanisms of clinically relevant microorganisms. *Clinical Microbiology Reviews*.
- DUSANE, D. H., KYROUAC, D., PETERSEN, I., BUSHROW, L., CALHOUN, J. H., GRANGER, J. F., PHIEFFER, L. S. & STOODLEY, P. 2018. Targeting intracellular *Staphylococcus aureus* to lower recurrence of orthopaedic infection. *J Orthop Res*, 36, 1086-1092.
- DUTHIE, E. S. & LORENZ, L. L. 1952. Staphylococcal coagulase; mode of action and antigenicity. *J Gen Microbiol*, 6, 95-107.
- FLEMMING, H. C. & WINGENDER, J. 2010. The biofilm matrix. *Nat Rev Microbiol*, 8, 623-33.
- FRANZ, S., RAMMELT, S., SCHARNWEBER, D. & SIMON, J. C. 2011. Immune responses to implants - A review of the implications for the design of immunomodulatory biomaterials.
- FUCHS, T. A., ABED, U., GOOSMANN, C., HURWITZ, R., SCHULZE, I., WAHN, V., WEINRAUCH, Y., BRINKMANN, V. & ZYCHLINSKY, A. 2007. Novel cell death program leads to neutrophil extracellular traps. *Journal of Cell Biology*, 176.
- GIBBONS, S., MOSER, E. & KAATZ, G. W. 2004. Catechin gallates inhibit multidrug resistance (MDR) in *Staphylococcus aureus*. *Planta Med*, 70, 1240-2.
- GIBBONS, S., OLUWATUYI, M. & KAATZ, G. W. 2003. A novel inhibitor of multidrug efflux pumps in *Staphylococcus aureus*. *J Antimicrob Chemother*, 51, 13-7.
- GÖTZ, F. & PETERS, G. 2014. Colonization of Medical Devices by Coagulase-Negative Staphylococci. *Infections Associated with Indwelling Medical Devices*.
- HADANO, Y., ISODA, M., ISHIBASHI, K. & KAKUMA, T. 2018. Validation of blood culture gram staining for the detection of *Staphylococcus aureus* by the 'oozing sign' surrounding clustered gram-positive cocci: a prospective observational study. *BMC Infect Dis*, 18, 490.
- HALL-STOODLEY, L., COSTERTON, J. W. & STOODLEY, P. 2004a. Bacterial biofilms: from the natural environment to infectious diseases. *Nat Rev Microbiol*, 2, 95-108.
- HALL-STOODLEY, L., COSTERTON, J. W. & STOODLEY, P. 2004b. Bacterial biofilms: From the natural environment to infectious diseases.
- HAN, Z., LAUTENBACH, E., FISHMAN, N. & NACHAMKIN, I. 2007. Evaluation of mannitol salt agar, CHROMagar Staph aureus and CHROMagar MRSA for detection of methicillin-resistant *Staphylococcus aureus* from nasal swab specimens. *J Med Microbiol*, 56, 43-46.

- HANEY, E. F., TRIMBLE, M. J., CHENG, J. T., VALLE, Q. & HANCOCK, R. E. W. 2018. Critical Assessment of Methods to Quantify Biofilm Growth and Evaluate Antibiofilm Activity of Host Defence Peptides. *Biomolecules*, 8.
- HANEY, E. F., TRIMBLE, M. J. & HANCOCK, R. E. W. 2021. Microtiter plate assays to assess antibiofilm activity against bacteria. *Nat Protoc*, 16, 2615-2632.
- HANSENOVA MANASKOVA, S., BIKKER, F. J., VEERMAN, E. C., VAN BELKUM, A. & VAN WAMEL, W. J. 2013. Rapid detection and semi-quantification of IgG-accessible *Staphylococcus aureus* surface-associated antigens using a multiplex competitive Luminex assay. *J Immunol Methods*, 397, 18-27.
- HANSENOVA MANASKOVA, S., VAN BELKUM, A., ENDTZ, H. P., BIKKER, F. J., VEERMAN, E. C. & VAN WAMEL, W. J. 2016. Comparison of non-magnetic and magnetic beads in bead-based assays. *J Immunol Methods*, 436, 29-33.
- ILIADIS, A. D. & RAMACHANDRAN, M. 2017. Paediatric bone and joint infection. *EFORT Open Rev*, 2, 7-12.
- JEFFERSON, K. K. 2004. What drives bacteria to produce a biofilm? *FEMS Microbiol Lett*, 236, 163-73.
- JENSEN, A. G. 2002. Importance of focus identification in the treatment of *Staphylococcus aureus* bacteraemia. *J Hosp Infect*, 52, 29-36.
- JIN, J., ZHANG, J., GUO, N., FENG, H., LI, L., LIANG, J., SUN, K., WU, X., WANG, X., LIU, M., DENG, X. & YU, L. 2011. The plant alkaloid piperine as a potential inhibitor of ethidium bromide efflux in *Mycobacterium smegmatis*. *J Med Microbiol*, 60, 223-229.
- JOO, H. S. & OTTO, M. 2015a. Mechanisms of resistance to antimicrobial peptides in staphylococci. *Biochimica Et Biophysica Acta-Biomembranes*, 1848, 3055-3061.
- JOO, H. S. & OTTO, M. 2015b. Mechanisms of resistance to antimicrobial peptides in staphylococci. *Biochim Biophys Acta*, 1848, 3055-61.
- KANG, H. K., KIM, H. Y. & CHA, J. D. 2011. Synergistic effects between silibinin and antibiotics on methicillin-resistant *Staphylococcus aureus* isolated from clinical specimens. *Biotechnol J*, 6, 1397-408.
- KAPLAN, J. B., IZANO, E. A., GOPAL, P., KARWACKI, M. T., KIM, S., BOSE, J. L., BAYLES, K. W. & HORSWILL, A. R. 2012. Low levels of beta-lactam antibiotics induce extracellular DNA release and biofilm formation in *Staphylococcus aureus*. *mBio*, 3, e00198-12.
- KAVANAGH, K. T. 2019. Control of MSSA and MRSA in the United States: protocols, policies, risk adjustment and excuses. *Antimicrob Resist Infect Control*, 8, 103.
- KHAN, H., ULLAH, H., CASTILHO, P., GOMILA, A. S., D'ONOFRIO, G., FILOSA, R., WANG, F., NABAVI, S. M., DAGLIA, M., SILVA, A. S., RENGASAMY, K. R. R., OU, J., ZOU, X., XIAO, J. & CAO, H. 2020. Targeting NF-kappaB signaling pathway in cancer by dietary polyphenols. *Crit Rev Food Sci Nutr*, 60, 2790-2800.
- KIEDROWSKI, M. R., KAVANAUGH, J. S., MALONE, C. L., MOOTZ, J. M., VOYICH, J. M., SMELTZER, M. S., BAYLES, K. W. & HORSWILL, A.

- R. 2011. Nuclease modulates biofilm formation in community-associated methicillin-resistant *Staphylococcus aureus*. *PLoS One*, 6, e26714.
- KIM, Y. J., CHOI, W. I., KO, H., SO, Y., KANG, K. S., KIM, I., KIM, K., YOON, H. G., KIM, T. J. & CHOI, K. C. 2014. Neobavaisoflavone sensitizes apoptosis via the inhibition of metastasis in TRAIL-resistant human glioma U373MG cells. *Life Sci*, 95, 101-7.
- KOLACZKOWSKA, E. & KUBES, P. 2013. Neutrophil recruitment and function in health and inflammation. *Nat Rev Immunol*, 13, 159-75.
- KURODA, M., OHTA, T., UCHIYAMA, I., BABA, T., YUZAWA, H., KOBAYASHI, I., CUI, L., OGUCHI, A., AOKI, K., NAGAI, Y., LIAN, J., ITO, T., KANAMORI, M., MATSUMARU, H., MARUYAMA, A., MURAKAMI, H., HOSOYAMA, A., MIZUTANI-UI, Y., TAKAHASHI, N. K., SAWANO, T., INOUE, R., KAITO, C., SEKIMIZU, K., HIRAKAWA, H., KUHARA, S., GOTO, S., YABUZAKI, J., KANEHISA, M., YAMASHITA, A., OSHIMA, K., FURUYA, K., YOSHINO, C., SHIBA, T., HATTORI, M., OGASAWARA, N., HAYASHI, H. & HIRAMATSU, K. 2001. Whole genome sequencing of methicillin-resistant *Staphylococcus aureus*. *Lancet*, 357, 1225-40.
- LAUPLAND, K. B., LYYTIKAINEN, O., SOGAARD, M., KENNEDY, K. J., KNUDSEN, J. D., OSTERGAARD, C., GALBRAITH, J. C., VALIQUETTE, L., JACOBSSON, G., COLLIGNON, P., SCHONHEYDER, H. C. & INTERNATIONAL BACTEREMIA SURVEILLANCE, C. 2013. The changing epidemiology of *Staphylococcus aureus* bloodstream infection: a multinational population-based surveillance study. *Clin Microbiol Infect*, 19, 465-71.
- LEWIS, K. 2007. Persister cells, dormancy and infectious disease. *Nat Rev Microbiol*, 5, 48-56.
- LEWIS, K. 2010. Persister cells. *Annu Rev Microbiol*, 64, 357-72.
- LIGOZZI, M., BERNINI, C., BONORA, M. G., DE FATIMA, M., ZULIANI, J. & FONTANA, R. 2002. Evaluation of the VITEK 2 system for identification and antimicrobial susceptibility testing of medically relevant gram-positive cocci. *J Clin Microbiol*, 40, 1681-6.
- LISTER, J. L. & HORSWILL, A. R. 2014. *Staphylococcus aureus* biofilms: recent developments in biofilm dispersal. *Front Cell Infect Microbiol*, 4, 178.
- LOTHER, S. A. & PRESS, N. 2017. Once-Daily Treatments for Methicillin-Susceptible *Staphylococcus aureus* Bacteremia: Are They Good Enough? *Current Infectious Disease Reports*, 19.
- LOWY, F. D. 2003. Antimicrobial resistance: The example of *Staphylococcus aureus*.
- LUCA, S. V., MACOVEI, I., BUJOR, A., MIRON, A., SKALICKA-WOZNIAK, K., APROTOSOAIE, A. C. & TRIFAN, A. 2020. Bioactivity of dietary polyphenols: The role of metabolites. *Crit Rev Food Sci Nutr*, 60, 626-659.
- MARSOT, A., MENARD, A., DUPOUEY, J., ALLANIOUX, L., BLIN, O. & GUILHAUMOU, R. 2020. Evaluation of current dosing guidance for oral rifampicin treatment in adult patients with osteoarticular infections. *Br J Clin Pharmacol*, 86, 2319-2324.

- MAUDSDOTTER, L., USHIJIMA, Y. & MORIKAWA, K. 2019. Fitness of Spontaneous Rifampicin-Resistant *Staphylococcus aureus* Isolates in a Biofilm Environment. *Front Microbiol*, 10, 988.
- MCCONOUGHAY, S. J., HOWLIN, R., GRANGER, J. F., MANRING, M. M., CALHOUN, J. H., SHIRTLIFF, M., KATHJU, S. & STOODLEY, P. 2014. Biofilms in periprosthetic orthopedic infections. *Future Microbiol*, 9, 987-1007.
- MCDONALD, C. L. & CHAPIN, K. 1995. Rapid identification of *Staphylococcus aureus* from blood culture bottles by a classic 2-hour tube coagulase test. *J Clin Microbiol*, 33, 50-2.
- MENZIES, D., ADJOBIMEY, M., RUSLAMI, R., TRAJMAN, A., SOW, O., KIM, H., OBENG BAAH, J., MARKS, G. B., LONG, R., HOEPPNER, V., ELWOOD, K., AL-JAHDALI, H., GNINAFON, M., APRIANI, L., KOESOEMADINATA, R. C., KRITSKI, A., ROLLA, V., BAH, B., CAMARA, A., BOAKYE, I., COOK, V. J., GOLDBERG, H., VALIQUETTE, C., HORNBY, K., DION, M. J., LI, P. Z., HILL, P. C., SCHWARTZMAN, K. & BENEDETTI, A. 2018. Four Months of Rifampin or Nine Months of Isoniazid for Latent Tuberculosis in Adults. *N Engl J Med*, 379, 440-453.
- MERINO, N., TOLEDO-ARANA, A., VERGARA-IRIGARAY, M., VALLE, J., SOLANO, C., CALVO, E., LOPEZ, J. A., FOSTER, T. J., PENADES, J. R. & LASA, I. 2009. Protein A-mediated multicellular behavior in *Staphylococcus aureus*. *J Bacteriol*, 191, 832-43.
- MOGA, M. A., DIMIENESCU, O. G., ARVATESCU, C. A., MIRONESCU, A., DRACEA, L. & PLES, L. 2016. The Role of Natural Polyphenols in the Prevention and Treatment of Cervical Cancer-An Overview. *Molecules*, 21.
- MONTANARO, L., POGGI, A., VISAI, L., RAVAIOLI, S., CAMPOCCIA, D., SPEZIALE, P. & ARCIOLA, C. R. 2011. Extracellular DNA in biofilms. *Int J Artif Organs*, 34, 824-31.
- MOORMEIER, D. E. & BAYLES, K. W. 2017. *Staphylococcus aureus* biofilm: a complex developmental organism. *Molecular Microbiology*.
- MURDOCH, D. R. & GREENLEES, R. L. 2004. Rapid identification of *Staphylococcus aureus* from BacT/ALERT blood culture bottles by direct Gram stain characteristics. *J Clin Pathol*, 57, 199-201.
- NAVARRO, G., CHENG, A. T., PEACH, K. C., BRAY, W. M., BERNAN, V. S., YILDIZ, F. H. & LININGTON, R. G. 2014. Image-based 384-well high-throughput screening method for the discovery of skyllamycins A to C as biofilm inhibitors and inducers of biofilm detachment in *Pseudomonas aeruginosa*. *Antimicrob Agents Chemother*, 58, 1092-9.
- NOVICK, R. 1967. Properties of a cryptic high-frequency transducing phage in *Staphylococcus aureus*. *Virology*, 33, 155-66.
- OMMEN, P., ZOBEEK, N. & MEYER, R. L. 2017. Quantification of biofilm biomass by staining: Non-toxic safranin can replace the popular crystal violet. *J Microbiol Methods*, 141, 87-89.
- OTTO, M. 2006. Bacterial evasion of antimicrobial peptides by biofilm formation. *Curr Top Microbiol Immunol*, 306, 251-8.

- OTTO, M. 2008a. Targeted Immunotherapy for Staphylococcal Infections. *BioDrugs*, 22.
- OTTO, M. 2008b. Targeted Immunotherapy for Staphylococcal Infections. *BioDrugs*, 22.
- PANCHOLI, P., CARROLL, K. C., BUCHAN, B. W., CHAN, R. C., DHIMAN, N., FORD, B., GRANATO, P. A., HARRINGTON, A. T., HERNANDEZ, D. R., HUMPHRIES, R. M., JINDRA, M. R., LEDEBOER, N. A., MILLER, S. A., MOCHON, A. B., MORGAN, M. A., PATEL, R., SCHRECKENBERGER, P. C., STAMPER, P. D., SIMNER, P. J., TUCCI, N. E., ZIMMERMAN, C. & WOLK, D. M. 2018. Multicenter Evaluation of the Accelerate PhenoTest BC Kit for Rapid Identification and Phenotypic Antimicrobial Susceptibility Testing Using Morphokinetic Cellular Analysis. *Journal of Clinical Microbiology*, 56.
- PARVIZI, J., PAWASARAT, I. M., AZZAM, K. A., JOSHI, A., HANSEN, E. N. & BOZIC, K. J. 2010. Periprosthetic joint infection: the economic impact of methicillin-resistant infections. *J Arthroplasty*, 25, 103-7.
- PATEL, J. D., KRUPKA, T. & ANDERSON, J. M. 2007. iNOS-mediated generation of reactive oxygen and nitrogen species by biomaterial-adherent neutrophils. *Journal of Biomedical Materials Research - Part A*, 80.
- PENDLETON, J. N., GORMAN, S. P. & GILMORE, B. F. 2013. Clinical relevance of the ESKAPE pathogens.
- PEYRUSSON, F., VARET, H., NGUYEN, T. K., LEGENDRE, R., SISMEIRO, O., COPPÉE, J. Y., WOLZ, C., TENSION, T. & VAN BAMBEKE, F. 2020. Intracellular *Staphylococcus aureus* persists upon antibiotic exposure. *Nature Communications*, 11.
- PIDDOCK, L. J., GARVEY, M. I., RAHMAN, M. M. & GIBBONS, S. 2010. Natural and synthetic compounds such as trimethoprim behave as inhibitors of efflux in Gram-negative bacteria. *J Antimicrob Chemother*, 65, 1215-23.
- RAJENDRA PRASAD, N., ANANDI, C., BALASUBRAMANIAN, S. & PUGALENDI, K. V. 2004. Antidermatophytic activity of extracts from *Psoralea corylifolia* (Fabaceae) correlated with the presence of a flavonoid compound. *J Ethnopharmacol*, 91, 21-4.
- RAMOS, S. 2008. Cancer chemoprevention and chemotherapy: dietary polyphenols and signalling pathways. *Mol Nutr Food Res*, 52, 507-26.
- REMIJSEN, Q., BERGHE, T. V., WIRAWAN, E., ASSELBERGH, B., PARTHOENS, E., DE RYCKE, R., NOPPEN, S., DELFORGE, M., WILLEMS, J. & VANDENABEELE, P. 2011. Neutrophil extracellular trap cell death requires both autophagy and superoxide generation. *Cell Research*, 21.
- RIBEIRO, M., MONTEIRO, F. J. & FERRAZ, M. P. 2012. Infection of orthopedic implants with emphasis on bacterial adhesion process and techniques used in studying bacterial-material interactions. *Biomatter*, 2, 176-94.
- RICCIARDI, B. F., MUTHUKRISHNAN, G., MASTERS, E., NINOMIYA, M., LEE, C. C. & SCHWARZ, E. M. 2018. *Staphylococcus aureus* Evasion of

Host Immunity in the Setting of Prosthetic Joint Infection: Biofilm and Beyond.

- RICE, K. C., MANN, E. E., ENDRES, J. L., WEISS, E. C., CASSAT, J. E., SMELTZER, M. S. & BAYLES, K. W. 2007. The cidA murein hydrolase regulator contributes to DNA release and biofilm development in *Staphylococcus aureus*. *Proc Natl Acad Sci U S A*, 104, 8113-8.
- RIEG, S., KERN, W. V. & SORIANO, A. 2018. Rifampicin in treating *S aureus* bacteraemia. *Lancet*, 392, 554-555.
- RODRIGUEZ-BANO, J., GARCIA, L., RAMIREZ, E., LUPION, C., MUNIAIN, M. A., VELASCO, C., GALVEZ, J., DEL TORO, M. D., MILLAN, A. B., LOPEZ-CERERO, L. & PASCUAL, A. 2010. Long-term control of endemic hospital-wide methicillin-resistant *Staphylococcus aureus* (MRSA): the impact of targeted active surveillance for MRSA in patients and healthcare workers. *Infect Control Hosp Epidemiol*, 31, 786-95.
- ROLO, J., WORNING, P., BOYE NIELSEN, J., SOBRAL, R., BOWDEN, R., BOUCHAMI, O., DAMBORG, P., GUARDABASSI, L., PERRETEN, V., WESTH, H., TOMASZ, A., DE LENCASTRE, H. & MIRAGAIA, M. 2017. Evidence for the evolutionary steps leading to mecA-mediated β -lactam resistance in staphylococci. *PLoS Genetics*, 13.
- ROMULO, A., ZUHUD, E. A. M., RONDEVALDOVA, J. & KOKOSKA, L. 2018. Screening of in vitro antimicrobial activity of plants used in traditional Indonesian medicine. *Pharm Biol*, 56, 287-293.
- SADOVSKAYA, I., VINOGRADOV, E., FLAHAUT, S., KOGAN, G. & JABBOURI, S. 2005. Extracellular carbohydrate-containing polymers of a model biofilm-producing strain, *Staphylococcus epidermidis* RP62A. *Infect Immun*, 73, 3007-17.
- SAHIN, I., BILIR, B., ALI, S., SAHIN, K. & KUCUK, O. 2019. Soy Isoflavones in Integrative Oncology: Increased Efficacy and Decreased Toxicity of Cancer Therapy. *Integr Cancer Ther*, 18, 1534735419835310.
- SENDI, P., ROHRBACH, M., GRABER, P., FREI, R., OCHSNER, P. E. & ZIMMERLI, W. 2006. *Staphylococcus aureus* small colony variants in prosthetic joint infection. *Clinical Infectious Diseases*, 43.
- SHIMIZU, M., SHIOTA, S., MIZUSHIMA, T., ITO, H., HATANO, T., YOSHIDA, T. & TSUCHIYA, T. 2001. Marked potentiation of activity of beta-lactams against methicillin-resistant *Staphylococcus aureus* by corilagin. *Antimicrob Agents Chemother*, 45, 3198-201.
- SHIOTA, S., SHIMIZU, M., SUGIYAMA, J., MORITA, Y., MIZUSHIMA, T. & TSUCHIYA, T. 2004. Mechanisms of action of corilagin and tellimagrandin I that remarkably potentiate the activity of beta-lactams against methicillin-resistant *Staphylococcus aureus*. *Microbiol Immunol*, 48, 67-73.
- SINGH, R., RAY, P., DAS, A. & SHARMA, M. 2010. Penetration of antibiotics through *Staphylococcus aureus* and *Staphylococcus epidermidis* biofilms. *J Antimicrob Chemother*, 65, 1955-8.
- SONG, X., PERENCEVICH, E., CAMPOS, J., SHORT, B. L. & SINGH, N. 2010. Clinical and economic impact of methicillin-resistant *Staphylococcus aureus* colonization or infection on neonates in intensive care units. *Infect Control Hosp Epidemiol*, 31, 177-82.

- SPANU, T., SANGUINETTI, M., CICCAGLIONE, D., D'INZEO, T., ROMANO, L., LEONE, F. & FADDA, G. 2003. Use of the VITEK 2 system for rapid identification of clinical isolates of Staphylococci from bloodstream infections. *J Clin Microbiol*, 41, 4259-63.
- STAVRI, M., PIDDOCK, L. J. & GIBBONS, S. 2007. Bacterial efflux pump inhibitors from natural sources. *J Antimicrob Chemother*, 59, 1247-60.
- STEWART, P. S. & COSTERTON, J. W. 2001. Antibiotic resistance of bacteria in biofilms. *Lancet*, 358, 135-8.
- STUTZ, K., STEPHAN, R. & TASARA, T. 2011. SpA, ClfA, and FnbA genetic variations lead to Staphaurex test-negative phenotypes in bovine mastitis Staphylococcus aureus isolates. *J Clin Microbiol*, 49, 638-46.
- SULTAN, A. R., HOPPENBROUWERS, T., LEMMENS-DEN TOOM, N. A., SNIJDERS, S. V., VAN NECK, J. W., VERBON, A., DE MAAT, M. P. M. & VAN WAMEL, W. J. B. 2019a. During the Early Stages of Staphylococcus aureus Biofilm Formation, induced Neutrophil Extracellular Traps (NETs) are degraded by Autologous Thermonuclease. *Infect Immun*.
- SULTAN, A. R., HOPPENBROUWERS, T., LEMMENS-DEN TOOM, N. A., SNIJDERS, S. V., VAN NECK, J. W., VERBON, A., DE MAAT, M. P. M. & VAN WAMEL, W. J. B. 2019b. During the Early Stages of Staphylococcus aureus Biofilm Formation, Induced Neutrophil Extracellular Traps Are Degraded by Autologous Thermonuclease. *Infect Immun*, 87.
- SULTAN, A. R., LATTWEIN, K. R., LEMMENS-DEN TOOM, N. A., SNIJDERS, S. V., KOOIMAN, K., VERBON, A. & VAN WAMEL, W. J. B. 2021. Paracetamol modulates biofilm formation in Staphylococcus aureus clonal complex 8 strains. *Scientific reports*, 11, 5114.
- SULTAN, A. R., SWIERSTRA, J. W., LEMMENS-DEN TOOM, N. A., SNIJDERS, S. V., HANSENOVA MANASKOVA, S., VERBON, A. & VAN WAMEL, W. J. B. 2018a. Production of Staphylococcal Complement Inhibitor (SCIN) and Other Immune Modulators during the Early Stages of Staphylococcus aureus Biofilm Formation in a Mammalian Cell Culture Medium. *Infect Immun*, 86.
- SULTAN, A. R., SWIERSTRA, J. W., LEMMENS-DEN TOOM, N. A., SNIJDERS, S. V., HANSENOVA MANASKOVA, S., VERBON, A. & VAN WAMEL, W. J. B. 2018b. Production of Staphylococcal Complement Inhibitor (SCIN) and Other Immune Modulators during the Early Stages of Staphylococcus aureus Biofilm Formation in a Mammalian Cell Culture Medium. *Infect Immun*.
- SULTAN, A. R., TAVAKOL, M., LEMMENS-DEN TOOM, N. A., CROUGHS, P. D., VERKAIK, N. J., VERBON, A. & VAN WAMEL, W. J. B. 2022. Real time monitoring of Staphylococcus aureus biofilm sensitivity towards antibiotics with isothermal microcalorimetry. *PLoS One*, 17, e0260272.
- SUREWAARD, B. G., DENISET, J. F., ZEMP, F. J., AMREIN, M., OTTO, M., CONLY, J., OMRI, A., YATES, R. M. & KUBES, P. 2016. Correction: Identification and treatment of the Staphylococcus aureus reservoir in vivo. *J Exp Med*, 213, 3087.

- SVENSSON, E. M., DIAN, S., TE BRAKE, L., GANIEM, A. R., YUNIVITA, V., VAN LAARHOVEN, A., VAN CREVEL, R., RUSLAMI, R. & AARNOUTSE, R. E. 2020. Model-Based Meta-analysis of Rifampicin Exposure and Mortality in Indonesian Tuberculous Meningitis Trials. *Clin Infect Dis*, 71, 1817-1823.
- SZLISZKA, E., CZUBA, Z. P., SEDEK, L., PARADYSZ, A. & KROL, W. 2011a. Enhanced TRAIL-mediated apoptosis in prostate cancer cells by the bioactive compounds neobavaisoflavone and psoralidin isolated from *Psoralea corylifolia*. *Pharmacol Rep*, 63, 139-48.
- SZLISZKA, E., SKABA, D., CZUBA, Z. P. & KROL, W. 2011b. Inhibition of inflammatory mediators by neobavaisoflavone in activated RAW264.7 macrophages. *Molecules*, 16, 3701-12.
- TALAN, D. A., KRISHNADASAN, A., GORWITZ, R. J., FOSHEIM, G. E., LIMBAGO, B., ALBRECHT, V. & MORAN, G. J. 2011. Comparison of staphylococcus aureus from skin and soft-tissue infections in us emergency Department patients, 2004 and 2008. *Clinical Infectious Diseases*, 53.
- TEGOS, G., STERMITZ, F. R., LOMOVSKAYA, O. & LEWIS, K. 2002. Multidrug pump inhibitors uncover remarkable activity of plant antimicrobials. *Antimicrob Agents Chemother*, 46, 3133-41.
- TONG, S. Y., DAVIS, J. S., EICHENBERGER, E., HOLLAND, T. L. & FOWLER, V. G., JR. 2015. Staphylococcus aureus infections: epidemiology, pathophysiology, clinical manifestations, and management. *Clin Microbiol Rev*, 28, 603-61.
- TOTE, K., VANDEN BERGHE, D., MAES, L. & COS, P. 2008. A new colorimetric microtitre model for the detection of Staphylococcus aureus biofilms. *Lett Appl Microbiol*, 46, 249-54.
- TUCHSCHERR, L., HEITMANN, V., HUSSAIN, M., VIEMANN, D., ROTH, J., VON EIFF, C., PETERS, G., BECKER, K. & LÖFFLER, B. 2010. Staphylococcus aureus small-colony variants are adapted phenotypes for intracellular persistence. *Journal of Infectious Diseases*, 202.
- TZENG, A., TZENG, T. H., VASDEV, S., KORTH, K., HEALEY, T., PARVIZI, J. & SALEH, K. J. 2015. Treating periprosthetic joint infections as biofilms: key diagnosis and management strategies. *Diagn Microbiol Infect Dis*, 81, 192-200.
- VAN TRIJP, M. J., MELLES, D. C., SNIJDERS, S. V., WERTHEIM, H. F., VERBRUGH, H. A., VAN BELKUM, A. & VAN WAMEL, W. J. 2010. Genotypes, superantigen gene profiles, and presence of exfoliative toxin genes in clinical methicillin-susceptible Staphylococcus aureus isolates. *Diagn Microbiol Infect Dis*, 66, 222-4.
- VERKAIK, N., BROUWER, E., HOOIJKAAS, H., VAN BELKUM, A. & VAN WAMEL, W. 2008. Comparison of carboxylated and Penta-His microspheres for semi-quantitative measurement of antibody responses to His-tagged proteins. *J Immunol Methods*, 335, 121-5.
- VUONG, C., VOYICH, J. M., FISCHER, E. R., BRAUGHTON, K. R., WHITNEY, A. R., DELEO, F. R. & OTTO, M. 2004. Polysaccharide intercellular adhesin (PIA) protects Staphylococcus epidermidis against

- major components of the human innate immune system. *Cell Microbiol*, 6, 269-75.
- WERTHEIM, H. F., MELLES, D. C., VOS, M. C., VAN LEEUWEN, W., VAN BELKUM, A., VERBRUGH, H. A. & NOUWEN, J. L. 2005a. The role of nasal carriage in *Staphylococcus aureus* infections. *Lancet Infect Dis*, 5, 751-62.
- WERTHEIM, H. F., VAN LEEUWEN, W. B., SNIJDERS, S., VOS, M. C., VOSS, A., VANDENBROUCKE-GRAULS, C. M., KLUYTMANS, J. A., VERBRUGH, H. A. & VAN BELKUM, A. 2005b. Associations between *Staphylococcus aureus* Genotype, Infection, and In-Hospital Mortality: A Nested Case-Control Study. *J Infect Dis*, 192, 1196-200.
- WHITCHURCH, C. B., TOLKER-NIELSEN, T., RAGAS, P. C. & MATTICK, J. S. 2002. Extracellular DNA required for bacterial biofilm formation. *Science*, 295, 1487.
- WIEGAND, I., HILPERT, K. & HANCOCK, R. E. 2008. Agar and broth dilution methods to determine the minimal inhibitory concentration (MIC) of antimicrobial substances. *Nat Protoc*, 3, 163-75.
- WYLLIE, D. H., CROOK, D. W. & PETO, T. E. 2006. Mortality after *Staphylococcus aureus* bacteraemia in two hospitals in Oxfordshire, 1997-2003: cohort study. *BMJ*, 333, 281.
- YE, H., HE, X. & FENG, X. 2020. Developing neobavaisoflavone nanoemulsion suppresses lung cancer progression by regulating tumor microenvironment. *Biomed Pharmacother*, 129, 110369.
- YU, J., JIANG, F., ZHANG, F., HAMUSHAN, M., DU, J., MAO, Y., WANG, Q., HAN, P., TANG, J. & SHEN, H. 2021. Thermonucleases Contribute to *Staphylococcus aureus* Biofilm Formation in Implant-Associated Infections-A Redundant and Complementary Story. *Front Microbiol*, 12, 687888.
- ZHOU, Y., ZHENG, J., LI, Y., XU, D. P., LI, S., CHEN, Y. M. & LI, H. B. 2016. Natural Polyphenols for Prevention and Treatment of Cancer. *Nutrients*, 8,

LAMPIRAN

A. Lampiran 1. Jadwal Pelaksanaan

No.	Rincian kegiatan	Tahun dan Bulan pelaksanaan					
		2022					
		6	7	8	9	10	11
1	Persiapan dan pembacaan proposal						
2	Pengajuan izin penelitian ke KPS						
3	Pengajuan persetujuan Kepala Laboratorium Biologi Molekuler dan Imunologi Departemen Mikrobiologi Fakultas kedokteran Universitas Hasanuddin untuk menggunakan isolate <i>S. aureus</i> yang tersimpan di Laboratorium						
4	Pengajuan Rekomendasi Etik Penelitian						
5	Persiapan alat dan bahan						
6	Pengumpulan dan reanimasi isolat						
7	Uji daya hambat pada biofilm						
8	Analisa data dan penyusunan laporan penelitian						
9	Pelaporan hasil akhir						

B. Lampiran 3. Surat izin Penelitian dari KPS

SURAT PERSETUJUAN ATASAN

Yang bertanda tangan di bawah ini :

Nama : Prof. dr. Mochammad Hatta, Ph.D., SpMK(K)
NIP : 195704161985031001
Jabatan : Ketua Program Studi Mikrobiologi Klinik Fakultas Kedokteran
Unhas

Menerangkan bahwa yang bersangkutan di bawah ini :

Nama : dr. Andi Rofian Sultan
NIM : C195182001
Jabatan : Peserta PPDS (Residen) Mikrobiologi Klinik FKUH
Judul Proposal : Uji daya hambat in neobavaisoflavone terhadap pembentukan
biofilm Staphylococcus aureus secara in-vitro

Menyetujui kepada yang bersangkutan di atas untuk meminta Permohonan Persetujuan Etik Penelitian Menggunakan Subyek Manusia di Fakultas Kedokteran Universitas Hasanuddin.

Makassar, 19 Juli 2022

Ketua Program Studi Mikrobiologi Klinik
Fakultas Kedokteran UNHAS



Prof. dr. Mochammad Hatta, Ph.D., SpMK(K)
NIP. 19570416 198503 1 001

C. Lampiran 4. Ethical Clearance



KEMENTERIAN PENDIDIKAN, KEBUDAYAAN, RISET DAN TEKNOLOGI
 UNIVERSITAS HASANUDDIN FAKULTAS KEDOKTERAN
 KOMITE ETIK PENELITIAN UNIVERSITAS HASANUDDIN
 RSPTN UNIVERSITAS HASANUDDIN
 RSUP Dr. WAHIDIN SUDIROHUSODO MAKASSAR
 Sekretariat : Lantai 2 Gedung Laboratorium Terpadu
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Contact Person: dr. Agussalim Bukhari, M.Med.,Ph.D., SpGK TELP. 081241850858, 0411 5780103, Fax : 0411-581431

REKOMENDASI PERSETUJUAN ETIK

Nomor : 517/UN4.6.4.5.31/ PP36/ 2022

Tanggal: 16 September 2022

Dengan ini Menyatakan bahwa Protokol dan Dokumen yang Berhubungan Dengan Protokol berikut ini telah mendapatkan Persetujuan Etik :

No Protokol	UH22080484		No Sponsor Protokol	
Peneliti Utama	dr. ANDI ROFIAN SULTAN, DMM, M.Sc.		Sponsor	
Judul Peneliti	UJI DAYA HAMBAT NEOBAVAISOFLAVONE TERHADAP PEMBENTUKAN BIOFILM Staphylococcus aureus SECARA IN VITRO			
No Versi Protokol	1	Tanggal Versi	25 Agustus 2022	
No Versi PSP		Tanggal Versi		
Tempat Penelitian	Laboratorium Mikrobiologi Klinik Fakultas Kedokteran Universitas Hasanuddin Makassar			
Jenis Review	<input type="checkbox"/> Exempted	<input checked="" type="checkbox"/> Expedited	<input type="checkbox"/> Fullboard Tanggal	Masa Berlaku 16 September 2022 sampai 16 September 2023 Frekuensi review lanjutan
Ketua KEP Universitas Hasanuddin	Nama Prof.Dr.dr. Suryani As'ad, M.Sc.,Sp.GK (K)	Tanda tangan 		
Sekretaris KEP Universitas Hasanuddin	Nama dr. Agussalim Bukhari, M.Med.,Ph.D.,Sp.GK (K)	Tanda tangan 		

Kewajiban Peneliti Utama:

- Menyerahkan Amandemen Protokol untuk persetujuan sebelum di implementasikan
- Menyerahkan Laporan SAE ke Komisi Etik dalam 24 Jam dan dilengkapi dalam 7 hari dan Laporan SUSAR dalam 72 Jam setelah Peneliti Utama menerima laporan
- Menyerahkan Laporan Kemajuan (progress report) setiap 6 bulan untuk penelitian resiko tinggi dan setiap setahun untuk penelitian resiko rendah
- Menyerahkan laporan akhir setelah Penelitian berakhir
- Melaporkan penyimpangan dari protokol yang disetujui (protocol deviation / violation)
- Mematuhi semua peraturan yang ditentukan