

DAFTAR PUSTAKA

- Abu-Mejdad, N.M.J.A., Al-Badran, A.I., Al-Saadoon, A.H. 2020. Purification and characterization of two killer toxins originated from *Torulaspora delbrueckii* (Lindner) and *Wickerhamomyces anomalus* (E.C.Hansen) Kurtzman, Robnett, and Basehoar-Powers. *Bull Natl Res Cent* .44, 48: 1-8
- Alonso, A., Belda, I., Santos, A., Navascués, E., Marquina, D. 2015. Advances in the control of the spoilage caused by *Zygosaccharomyces* species on sweet wines and concentrated grape musts. *Food Control*. 51: 129–134.
- Al-Qaysi, S.A.S., Al-Haideri, H., Thabit, Z.A., Al-Kubaisy, W.H.A.A.-R., Ibrahim, J.A.A.-R. 2017. Production, Characterization, and Antimicrobial Activity of Mycocin Produced by *Debaryomyces hansenii* DSMZ70238. *Int J Microbiol*. 1-9
- Alturki, S.N., Al- saud, N.S., Alhejin, A.M., Amasha, R. hussan, Almanzlawi, A.M.K., Hassan, S.M. 2019. Killer phenomenon in yeast: An Overview . *Journal of American Science*. 15: 58–66.
- Bajaj, B.K., Raina, S., Singh, S. 2013. Killer toxin from a novel killer yeast *Pichia kudriavzevii* RY55 with idiosyncratic antibacterial activity. *J Basic Microbiol*. 53: 645–656.
- Bajaj, B.K., Sharma, S. 2010. Construction of killer industrial yeast *Saccharomyces cerevisiae* HAU-1 and its fermentation performance. *Braz. J. Microbiol*. 41: 477–485.
- Bajaj, B.K., Singh, S. 2017. Biology of killer yeast and technological implications, in: Satyanarayana, T., Kunze, G. (Eds.), *Yeast Diversity in Human Welfare*. Springer Singapore, Singapore. 163–190.
- Banjara, N., Nickerson, K., Suhr, M., & HE, H.-A. 2016. Killer toxin from several food-derived *Debaryomyces hansenii* strains effective against pathogenic *Candida* yeasts. *International Journal of Food Microbiolog*. 222: 23–29.
- Belda, I., Ruiz, J., Alonso, A., Marquina, D., Santos, A. 2017. The Biology of *Pichia membranifaciens* Killer Toxins. *Toxins (Basel)*. 9.
- Belgacem, Z. Ben, Rehaïem, A., Bernárdez, P. F., Manai, M., & Castro, L. P. 2012. Interactive effects of pH and temperature on the bacteriocin stability by response surface analysis. *Microbiology*. 81: 195–200.
- Boynton, P.J., 2019. The ecology of killer yeasts: Interference competition in natural habitats. *Yeast*. 36: 473–485.

- Branco, P., Francisco, D., Chambon, C., Hébraud, M., Arneborg, N., Almeida, M.G., Caldeira, J., Albergaria, H. 2014. Identification of novel GAPDH-derived antimicrobial peptides secreted by *Saccharomyces cerevisiae* and involved in wine microbial interactions. *Appl. Microbiol. Biotechnol.* 98, 843–853.
- Breinig, F., Sendzik, T., Eisfeld, K., Schmitt, M.J. 2006. Dissecting toxin immunity in virus-infected killer yeast uncovers an intrinsic strategy of self-protection. *Proc. Natl. Acad. Sci. USA.* 103: 3810–3815.
- Cecarini, V., Cuccioloni, M., Bonfili, L., Ricciutelli, M., Valzano, M., Cappelli, A., Amantini, C., Favia, G., Eleuteri, A.M., Angeletti, M., Ricci, I., 2019. Identification of a Killer Toxin from *Wickerhamomyces anomalus* with β -Glucanase Activity. *Toxins (Basel)*. 11.
- Clinical and Laboratory Standards Institute (CLSI). 2015. *Performance standard for antimicrobial susceptibility testing; twenty-second informational supplement*. Clinical and Laboratory Standards Institute, Wayne, PA, USA.
- Clinical and Laboratory Standards Institute. 2012. *Performance standards for antimicrobial disk susceptibility tests: Approved standard - Eleventh edition*. 32
- Comitini, F., Agarbati, A., Canonico, L., Galli, E., & Ciani, M. 2021. Purification and characterization of WA18, a new mycocin produced by *Wickerhamomyces anomalus* active in wine against *Brettanomyces bruxellensis* spoilage yeasts. *Microorganisms*. 9:1–14.
- Correia S., Guerreiro JF., Loureiro-Dias MC., Leao C., Corte-Real M. 2014. *Zygosaccharomyces*. *Yoghurt*. 3: 849-855.
- Dakal, T.C., Solieri, L., Giudici, P. 2014. Adaptive response and tolerance to sugar and salt stress in the food yeast *Zygosaccharomyces rouxii*. *Int. J. Food Microbiol.* 185: 140–157.
- El-Banna A., A., El-Sahn, M.A., Shehata, M.G. 2011. Yeasts Producing Killer Toxins: An Overview.
- Enrique, M., Ibáñez, A., Marcos, J.F., Yuste, M., Martínez, M., Vallés, S., Manzanares, P. 2010. beta-Glucanases as a tool for the control of wine spoilage yeasts. *J. Food Sci.* 75.
- Escott, C., del Fresno, J., Loira, I., Morata, A., Suárez-Lepe, J. 2018. *Zygosaccharomyces rouxii*: Control Strategies and Applications in Food and Winemaking. *Fermentation* 4: 69.

- Escott, C., Loira, I., Morata, A., Bañuelos, M.A., Suárez-Lepe, J.A. 2017. Wine spoilage yeasts: control strategy, in: Morata, A., Loira, I. (Eds.), *Yeast - Industrial Applications. InTech*.
- Fernández de Ullivarri, M., Bulacios, G.A., Navarro, S.A., Lanza, L., Mendoza, L.M., Chalón, M.C. 2020. The killer yeast *Wickerhamomyces anomalus* Cf20 exerts a broad anti-*Candida* activity through the production of killer toxins and volatile compounds. *Med Mycol*. 58: 1102–1113.
- Freimoser, F.M., Rueda-Mejia, M.P., Tilocca, B., Migheli, Q. 2019. Biocontrol yeasts: mechanisms and applications. *World J Microbiol Biotechnol* 35: 154.
- Goldring JPD. 2019. Measuring Protein Concentration with Absorbance, Lowry, Bradford Coomassie Blue, or the Smith Bicinchoninic Acid Assay Before Electrophoresis, in: Kurien BT and Scofield RH (eds.), *Electrophoretic Separation of Proteins: Methods and Protocols, Methods in Molecular Biology*. 855: 31-39
- Golubev, W.I. 1998. Mycocins (killer toxins), in: *The Yeasts. Elsevier*: 55–62.
- Golubev, W.I. 2006. Antagonistic interactions among yeasts, in: Péter, G., Rosa, C. (Eds.), *Biodiversity and Ecophysiology of Yeasts*. Springer-Verlag, Berlin/Heidelberg. 197–219.
- Golubev, W.I. 2009. Anti-tremellomycetes activity of *Cryptococcus pinus* mycocin. *Microbiology*. 78:315–320.
- Golubev, W. I. 2013. A *Kluyveromyces lactis* mycocin active at neutral pH. *Microbiology (Russian Federation)*, 82: 290–294.
- Guo, F.-J., Ma, Y., Xu, H.-M., Wang, X.-H., Chi, Z.-M. 2013. A novel killer toxin produced by the marine-derived yeast *Wickerhamomyces anomalus* YF07b. *Antonie Van Leeuwenhoek*. 103: 737–746.
- Guo H, Yuana YH, Niu C, Qiua Y, Weia JP, Yuea TL. 2018. Development of an indirect enzyme-linked immunosorbent assay for the detection of osmotolerant yeast *Zygosaccharomyces rouxii* in different food. *Food and Agricultural Immunology*. 29: 976-988.
- Hameed, A.R. 2019. Killer Activity of *Hanseniaspora uvarum* Isolated from Dates Vinegar: Partially Purification and Characterization of Killer Toxin. *Baghdad Sci.J*. 16: 140-150.
- Hanschke, R., Schauer, F. 1996. Improved ultrastructural preservation of yeast cells for scanning electron microscopy. *J. Microsc*. 184: 81–87.

- Hatoum, R., Labrie, S., Fliss, I. 2012. Antimicrobial and probiotic properties of yeasts: from fundamental to novel applications. *Front. Microbiol.* 3: 421.
- Hettiarachchi, S., Lee, S.-J., Lee, Y., Kwon, Y.-K., De Zoysa, M., Moon, S., Jo, E., Kim, T., Kang, D.-H., Heo, S.-J., Oh, C. 2017. A Rapid and Efficient Screening Method for Antibacterial Compound-Producing Bacteria. *J Microbiol Biotechnol.* 27: 1441–1448.
- İzgü, F., Altınbay, D., Acun, T. 2006. Killer toxin of *Pichia anomala* NCYC 432; purification, characterization and its exo- β -1,3-glucanase activity. *Enzyme Microb. Technol.* 39: 669–676.
- James, S.A., Stratford, M., 2003. Spoilage yeasts with emphasis on the genus *Zygosaccharomyces*, in: *Yeasts in Food*. Elsevier. 171–191.
- Keszthelyi, A., Ohkusu, M., Takeo, K., Pfeiffer, I., Litter, J., Kucsera, J. 2006. Characterisation of the anticryptococcal effect of the FC-1 toxin produced by *Filobasidium capsuligenum*. *Mycoses* 49: 76–183.
- Kono, I., Himeno, K. 1992. *Kluyveromyces* Yeast Having Killer Activity against *Zygosaccharomyces rouxii*. *Journal of Food Science and Technology*. 39: 1135–1139.
- Kuanyshev, N., Adamo, G.M., Porro, D., Branduardi, P. 2017. The spoilage yeast *Zygosaccharomyces bailii*: Foe or friend?. *Yeast*. 34: 359–370.
- Kulakovskaya, E., Zvonarev, A., Farofonova, V. 2019. Characteristics of Killer Toxin of the Yeast *Cryptococcus pinus*. *JBM*. 7: 73–82.
- Labani, F.-Z.K., Turchetti, B., Bennamoun, L., Dakhmouche, S., Roberti, R., Corazzi, L., Meraihi, Z., Buzzini, P. 2015. A novel killer protein from *Pichia kluyveri* isolated from an Algerian soil: purification and characterization of its in vitro activity against food and beverage spoilage yeasts. *Antonie Van Leeuwenhoek*. 107: 961–970.
- Laemmli, U.K., 1970. Cleavage of structural proteins during the assembly of the head of bacteriophage T4. *Nature*. 227: 680–685.
- Lesage, G., Bussey, H. 2006. Cell wall assembly in *Saccharomyces cerevisiae*. *Microbiol. Mol. Biol. Rev.* 70: 317–343.
- Lee, K. E., Lee, S. M., Choi, Y. H., Hurh, B. S., and Kim, Y. S. 2014. Comparative volatile profiles in soy sauce according to inoculated microorganisms. *Biosci. Biotechnol. Biochem.* 77: 2192–2200.

- Lischer, K., Sitorus, S. R. A., Guslianto, B. W., Avila, F., Khayrani, A. C., & Sahlan, M. 2021. Anti-Breast Cancer Activity on MCF-7 Cells of Melittin from Indonesia's Apis cerana: An In Vitro Study. *Asian Pacific Journal of Cancer Prevention*. 22: 3913–3919.
- Liu, J., & Balasubramanian, M. K. 2001. 1,3-beta-glucan synthase: A useful target for antifungal drugs. *Current Drug Targets. Infectious Disorders*. 1: 159–169.
- Liu GL., Wang K., Hua MX., Buzdar MA., Chi ZM. 2012. Purification and characterization of the cold-active killer toxin from the psychrotolerant yeast *Mrakia frigida* isolated from sea sediments in Antarctica. *Process Biochemistry*. 47: 822-827.
- Liu, G.-L., Chi, Z., Wang, G.-Y., Wang, Z.-P., Li, Y., Chi, Z.-M. 2015. Yeast killer toxins, molecular mechanisms of their action and their applications. *Crit Rev Biotechnol* 35: 222–234.
- Lopes, C.A., Sangorrín, M.P. 2010. Optimization of killer assays for yeast selection protocols. *Rev. Argent. Microbiol.* 42: 298–306.
- Lowes, K.F., Shearman, C.A., Payne, J., MacKenzie, D., Archer, D.B., Merry, R.J., Gasson, M.J. 2000. Prevention of yeast spoilage in feed and food by the yeast mycocin HMK. *Appl. Environ. Microbiol.* 66: 1066–1076.
- Lowry, O.H., Rosebrough, N.J., Farr, A.L., Randall, R.J. 1951. Protein measurement with the Folin phenol reagent. *J. Biol. Chem.* 193: 265–275.
- Magliani, W., Conti, S., Gerloni, M., Bertolotti, D., Polonelli, L. 1997. Yeast killer systems. *Clin. Microbiol. Rev.* 10: 369–400.
- Magliani, W., Conti, S., Travassos, L.R., Polonelli, L. 2008. From yeast killer toxins to antibiobodies and beyond. *FEMS Microbiol. Lett.* 288: 1–8.
- Marquina, D., Santos, A., Peinado, J.M. 2002. Biology of killer yeasts. *Int Microbiol.* 5: 65–71.
- Martorell, P., Stratford, M., Steels, H., Fernández-Espinar, M.T., Querol, A. 2007. Physiological characterization of spoilage strains of *Zygosaccharomyces bailii* and *Zygosaccharomyces rouxii* isolated from high sugar environments. *Int. J. Food Microbiol.* 114: 234–242.
- Molon, M., Woznicka, O., & Zebrowski, J. 2018. Cell wall biosynthesis impairment affects the budding lifespan of the *Saccharomyces cerevisiae* yeast. *Biogerontology*. 19: 67–79.

- Muccilli, S., Restuccia, C. 2015. Bioprotective role of yeasts. *Microorganisms*. 3: 588–611.
- Muccilli, S., Wemhoff, S., Restuccia, C., Meinhardt, F. 2013. Exoglucanase-encoding genes from three *Wickerhamomyces anomalus* killer strains isolated from olive brine. *Yeast*. 30: 33–43.
- Palpacelli, V., Ciani, M., Rosini, G. 1991. Activity of different “killer” yeasts on strains of yeast species undesirable in the food industry. *FEMS Microbiol. Lett.* 68: 75–78.
- Parveen, M., Begum, A. 2010. Production And Effect of Killer Toxin by *Saccharomyces cerevisiae* on Sensitive Yeast and Fungal Pathogens. *International Journal of Pharmaceutical Sciences Review and Research*.
- Peng Y, Chi ZM, Wang XH, Li J. 2010. b-1, 3-Glucanase inhibits activity of the killer toxin produced by the marine-derived yeast *Williopsis saturnus* WC91-2. *Mar Biotechnol.* 12: 479–485.
- Péter, G., Rosa, C. (Eds.), 2006. *Biodiversity and ecophysiology of yeasts*. Springer-Verlag, Berlin/Heidelberg.
- Pina, C., Gonçalves, P., Prista, C., Loureiro-Dias, M.C. 2004. Ffz1, a new transporter specific for fructose from *Zygosaccharomyces bailii*. *Microbiology (Reading, Engl.)* 150: 2429–2433.
- Ragavan, M. L. 2020. Production and Purification of Killer Toxin From Probiotic Yeasts and Its Effect on Foodborne Pathogens. *Journal of Microbiology, Biotechnology and Food Sciences*. 10: 350–353.
- Saksinchai, S., Suzuki, M., Chantawannakul, P., Ohkuma, M., Lumyong, S. 2012. A novel ascosporeogenous yeast species, *Zygosaccharomyces siamensis*, and the sugar tolerant yeasts associated with raw honey collected in Thailand. *Fungal Divers.* 52: 123–139.
- Schaffrath, R., Meinhardt, F., Klassen, R. 2018. Yeast killer toxins: fundamentals and applications, in: Anke, T., Schöffler, A. (Eds.), *Physiology and Genetics*. Springer International Publishing, Cham. 87–118.
- Schmitt, M.J., Breinig, F. 2002. The viral killer system in yeast: from molecular biology to application. *FEMS Microbiol. Rev.* 26: 257–276.
- Soares, G., Sato, H. 2000. Characterization of The *Saccharomyces cerevisiae* Y500-4L Killer Toxin . *Brazilian Journal of Microbiology*. 31: 291–297.
- Suzuki C, Nikkuni S. 2014. Purification and properties of the killer toxin produced

- by a halotolerant yeast. *Agric Biol Chem.* 53: 2599–2604.
- Tan C., Wang L., Xue Y., Lin Shou., Yu Gang., Yang S. 2018. Purification and molecular characterization of a *Metschnikowia saccharicola* killer toxin lethal to a crab pathogenic yeast. *FEMS Microbiology Letters.* 365. 1-7
- Tay, S.-T., Lim, S.-L., Tan, H.-W. 2014. Growth inhibition of *Candida* species by *Wickerhamomyces anomalus* mycocin and a lactone compound of *Aureobasidium pullulans*. *BMC Complement. Altern. Med.* 14: 439.
- Thammasittirong, S. N. R., Thirasaktana, T., Thammasittirong, A., & Srisodsuk, M. 2013. Improvement of ethanol production by ethanol-tolerant *Saccharomyces cerevisiae* UVNR56. *SpringerPlus.* 2: 1–5.
- Valzano, M., Cecarini, V., Cappelli, A., Capone, A., Bozic, J., Cuccioloni, M., Epis, S., Petrelli, D., Angeletti, M., Eleuteri, A.M., Favia, G., Ricci, I., 2016. A yeast strain associated to *Anopheles* mosquitoes produces a toxin able to kill malaria parasites. *Malar. J.* 15, 21.
- Villalba, M. L., Mazzucco, M. B., Lopes, C. A., Ganga, M. A., & Sangorrín, M. P. 2020. Purification and characterization of *Saccharomyces eubayanus* killer toxin: Biocontrol effectiveness against wine spoilage yeasts. *International Journal of Food Microbiology.* 331. 1-9.
- Walker, G. M. 2011. *Pichia anomala*: Cell physiology and biotechnology relative to other yeasts. *Antonie van Leeuwenhoek, International Journal of General and Molecular Microbiology.* 99: 25–34.
- Wang, D., Zhang, M., Huang, J., Zhou, R., Jin, Y., Zhao, D., Zheng, J., Wu, C. 2021. Heat preadaptation improved the ability of *Zygosaccharomyces rouxii* to salt stress: a combined physiological and transcriptomic analysis. *Appl. Microbiol. Biotechnol.* 105: 259–270.
- Wang, X.-X., Chi, Z., Peng, Y., Wang, X.-H., Ru, S.-G., Chi, Z.-M. 2012. Purification, characterization and gene cloning of the killer toxin produced by the marine-derived yeast *Williopsis saturnus* WC91-2. *Microbiol Res.* 167: 558–563.
- Wemhoff, S., Klassen, R., Meinhardt, F. 2014. Site-directed mutagenesis of the heterotrimeric killer toxin zymocin identifies residues required for early steps in toxin action. *Appl. Environ. Microbiol.* 80: 6549–6559.