

BAB 5

KESIMPULAN DAN SARAN

5.1 Kesimpulan

Berdasarkan kajian pustaka yang dilakukan, senyawa allicin pada tanaman bawang putih (*Allium sativum*) memiliki efektivitas sebagai terapi *adjuvant* untuk badai sitokin dengan menurunkan regulasi sitokin pro inflamasi IL-6 dan TNF- α .

5.2 Saran

Perlu dilakukan kajian pustaka tentang tanaman bawang putih (*Allium sativum*) yang membahas mengenai mekanisme tanaman ini dalam prosesnya menurunkan mediator pro inflamasi serta efek anti inflamasi senyawa kimia lain yang terkandung pada tanaman bawang putih.

DAFTAR PUSTAKA

- Ahsan, F., Rahmawati, N. Y. dan Alditia, F. N. 2020, Lawan virus corona: studi nutrisi untuk kekebalan tubuh, Airlangga University Press, Surabaya.
- Albabbain, I. T., Almohanna, R. S., Alkhuraiji, A. A., Alsalamah, R. K., Almasoud, N. A., AlBaqmi, K. H. and Althubaiti, A. M. 2021, Risk factors for the systemic inflammatory response syndrome and sepsis following surgical management of acute intestinal obstruction, *International Journal of Health Sciences*, **15(6)**: 28-33.
- Barnes, J., Anderson, L. A. and Phillipson, J. D. 2008, Herbal medicines-third edition, *American Journal of Homeopathic Medicine*, **101(1)**: 52.
- Arellano Buendía, A. S., Tostado González, M., Sánchez Reyes, O., García Arroyo, F. E., Argüello García, R., Tapia, E., Sánchez Lozada, L, G., and Osorio Alonso, H. 2018, Immunomodulatory effects of the nutraceutical garlic derivative allicin in the progression of diabetic nephropathy, *International Journal of Molecular Sciences*, **19(10)**: 1-13.
- Chao, J., Cui, S., Liu, C., Liu, S., Liu, S., Han, Y. and Yang, R. 2020, Detection of early cytokine storm in patients with septic shock after abdominal surgery, *Journal of Translational Internal Medicine*, **8(2)**: 91-98.
- Chousterman, B. G., Swirski, F. K. and Weber, G. F. 2017, Cytokine storm and sepsis disease pathogenesis, *In Seminars in Immunopathology*, **39(5)**: 517-528.
- Cutler, A. and Brombacher, F. 2005, Cytokine therapy, *Annals of The New York Academy of Sciences*, **1056(1)**: 16-29.
- Dehghani, S., Alipoor, E., Salimzadeh, A., Yaseri, M., Hosseini, M., Feinle-Bisset, C. and Hosseinzadeh-Attar, M. J. 2018, The effect of a garlic supplement on the pro-inflammatory adipocytokines, resistin and tumor necrosis factor-alpha, and on pain severity, in overweight or obese women with knee osteoarthritis, *Phytomedicine*, **48**: 70-75.

- Elkayam, A., Peleg, E., Grossman, E., Shabtay, Z. and Sharabi, Y. 2013, Effects of allicin on cardiovascular risk factors in spontaneously hypertensive rats, *Israel Medical Association Journal*, **15(3)**: 170-3.
- Fajgenbaum, D. C. and June, C. H. 2020, Cytokine storm, *New England Journal of Medicine*, **383(23)**: 2255-2273.
- Gupta, K. K., Khan, M. A. and Singh, S. K. 2020, Constitutive inflammatory cytokine storm: a major threat to human health, *Journal of Interferon & Cytokine Research*, **40(1)**: 19-23.
- Hariyati, R. T. S. 2010, Mengenal systematic review theory dan studi kasus, *Jurnal Keperawatan Indonesia*, **13(2)**: 124-132.
- Huang, C., Wang, Y., Li, X., Ren, L., Zhao, J., Hu, Y. and Cao, B. 2020, Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China, *The Lancet*, **395(10223)**: 497-506.
- Kunnumakkara, A. B., Rana, V., Parama, D., Banik, K., Girisa, S., Henamayee, S., Thakur, K. K., Dutta, U., Garodia, P., Gupta, C. S., and Aggarwal, B. B. 2021, Covid-19, cytokines, inflammation, and spices: How are they related?, *Life Sciences Journal*, **284(2)**: 119201.
- Lai, Y. and Dong, C. 2016, Therapeutic antibodies that target inflammatory cytokines in autoimmune diseases, *International Immunology*, **28(4)**: 181-188.
- Li, X., Geng, M., Peng, Y., Meng, L. and Lu, S. 2020, Molecular immune pathogenesis and diagnosis of covid-19, *Journal of Pharmaceutical Analysis*, **10(2)**: 102-108.
- Mahanum, M. 2021, Tinjauan kepustakaan, *Journal of Education*, **1(2)**: 1-12.
- Rahman, M. S. 2007, Allicin and other functional active components in garlic: health benefits and bioavailability, *International Journal of Food Properties*, **10(2)**: 245-268.
- Rosenthal, K. S., Carambula, R. and Zimmerman, D. H. 2019, Why don't we have a vaccine against autoimmune diseases? A review, *Journal of Clinical & Cellular Immunology*, **10(1)**: 1-20.

- Rumende, M.C., Susanto, C.E. and Sitorus P.T. 2020, The management of cytokine storm in covid-19, *Acta Medica Indonesiana*, **52(3)**: 306-313.
- Sánchez-Gloria, J. L., Martínez-Olivares, C. E., Rojas-Morales, P., Hernández-Pando, R., Carbó, R., Rubio-Gayosso, I. and Osorio-Alonso, H. 2021, Anti-inflammatory effect of allicin associated with fibrosis in pulmonary arterial hypertension, *International Journal of Molecular Sciences*, **22(16)**: 8600.
- Santoso, H. B. 2000, Bawang putih, Penerbit Kanisius, Yogyakarta.
- Sapra, L., Bhardwaj, A., Azam, Z., Madhry, D., Verma, B., Rathore, S. and Srivastava, R. K. 2021, Phytotherapy for treatment of cytokine storm in covid-19, *Front Bioscience*, **26(5)**: 51-75.
- Serazin, N. A., Edem, B., Williams, S. R., Ortiz, J. R., Kawade, A., Das, M. K. and Bastero, P. 2021, Acute respiratory distress syndrome (ARDS) as an adverse event following immunization: Case definition & guidelines for data collection, analysis, and presentation of immunization safety data, *Vaccine*, **39(22)**: 3028-3036.
- Shan, Y., Chen, D., Hu, B., Xu, G., Li, W., Jin, Y. and Jin, L. 2021, Allicin ameliorates renal ischemia/reperfusion injury via inhibition of oxidative stress and inflammation in rats, *Biomedicine & Pharmacotherapy*, **142(12)**: 1-8.
- Sharun, K., Tiwari, R., Dhama, J. and Dhama, K. 2020, Dexamethasone to combat cytokine storm in covid-19: Clinical trials and preliminary evidence, *International Journal of Surgery*, **82**: 179.
- Shekh, S., Reddy, K. K. A. and Gowd, K. H. 2021, In silico allicin induced S-thioallylation of sars-cov-2 main protease, *Journal of Sulfur Chemistry*, **42(1)**: 109-120.
- Shen, N., Cheng, A., Qiu, M. and Zang, G. 2019, Allicin improves lung injury induced by sepsis via regulation of the toll-like receptor 4 (TLR4)/myeloid differentiation primary response 88 (MYD88)/nuclear factor kappa-B (NF-κB) pathway, *Medical Science Monitor*, *International Medical Journal of Experimental and Clinical Research*, **25**: 2567-2576.

- Shimabukuro-Vornhagen, A., Gödel, P., Subklewe, M., Stemmler, H. J., Schlößer, H. A., Schlaak, M., Kochanek, M., Böll, B. and von Bergwelt-Baildon, M. S. 2018, Cytokine release syndrome, *Journal for ImmunoTherapy of Cancer*, **6(1)**: 1-14.
- Singh, R. and Singh, K. 2019, Garlic: A spice with wide medicinal actions, *Journal of Pharmacognosy and Phytochemistry*, **8(1)**: 1349-1355.
- Sinha, P., Matthay, M. A. and Calfee, C. S. 2020, Is a “cytokine storm” relevant to covid-19?, *Jama Internal Medicine*, **180(9)**: 1152-1154.
- Siswanto, S. 2010, Systematic review sebagai metode penelitian untuk mensintesis hasil-hasil penelitian (sebuah pengantar), *Buletin Penelitian Sistem Kesehatan*, **13(4)**: 21312.
- Syamsiah, I. S. and Tajudin. 2003, Khasiat & manfaat bawang putih: Raja antibiotik alam, AgroMedia, Jakarta.
- Vahid, F., & Rahmani, D. 2021, Can an anti-inflammatory diet be effective in preventing or treating viral respiratory diseases? A systematic narrative review, *Clinical Nutrition ESPEN*, **43**: 9-15.
- Wahono, R. S., 2016, ‘Literatur review: pengantar dan metode’, *Research methodology*, diakses pada 24 November 2020, <https://romisatriawahono.net/lectures/>.
- Yiu, H. H., Graham, A. L. and Stengel, R. F. 2012, Dynamics of a cytokine storm, *Journal of Plos One*, **7(10)**: 45027.
- Zhao, M. 2020, Cytokine storm and immunomodulatory therapy in covid-19: Role of chloroquine and anti-IL-6 monoclonal antibodies, *International Journal of Antimicrobial Agents*, **55(6)**: 105982.