

- A, H. & , Furusawa E, Chou SC, H. Y. (1996) 'Immunomodulation contributes to the anticancer activity of morinda citrifolia (noni) fruit juice', *Europe PMC*.
- Adamu, U. M., Lawal, H. & Ramasamy, R. (2021) 'Immunomodulatory functions of moringa oleifera (Lam.)', *Malaysian Journal of Medicine and Health Sciences*, 17(7), pp. 54–63.
- Aldi, Y., Novelin, F. & Handayani, D. (2015) 'Aktivitas Beberapa Subfraksi Herba Meniran (Phyllanthus niruri Linn.) terhadap Aktivitas dan Kapasitas Fagositosis Makrofag', *Scientia : Jurnal Farmasi dan Kesehatan*, 5(2), p. 92. doi: 10.36434/scientia.v5i2.28.
- Berata, I. K. (2009) 'The use of Balb/c for the Animal Model to Study of Jembrana Disease Virus', *Buletin Veteriner Udayana*, 1(1), pp. 7–11.
- Dobranowski, P. & Sly, L. M. (2018) 'SHIP negatively regulates type II immune responses in mast cells and macrophages', *Journal of Leukocyte Biology*, 103(6), pp. 1053–1064. doi: 10.1002/JLB.3MIR0817-340R.
- Edy, P. D. S. D. (2014) 'Pengaruh Pemberian Tiga Jenis Kombinasi Herbal A, B, dan C Terhadap Kapasitas Produksi Interferon Gamma (Ifn- γ) dan Interleukin 4 (Il-4) Pada Mencit Balb/C', *Undergraduate thesis, Faculty of Medicine Diponegoro University*.
- Evavold, C. L. & Kagan, J. C. (2018) 'How Inflammasomes Inform Adaptive Immunity', *Journal of Molecular Biology*, 430(2), pp. 217–237. doi: 10.1016/J.JMB.2017.09.019.
- Febrianasari, F. (2018) 'The Test Of Antibacterial Activity Of Kirinyu Leaf (Chromolaena odorata) Extract On *Staphylococcus aureus*'.
- Fortuna, R., Hart, & Sharkey. (2021) 'Effect of a prebiotic supplement on knee joint function, gut microbiota, and inflammation in adults with co-morbid obesity and knee osteoarthritis: study protocol for a randomized controlled trial', *Trials*, 22(1), pp. 1–10. doi: 10.1186/s13063-021-05212-w.

Inflammatory Responses to *Clostridium difficile* in Antibiotic-compromised Mice ',
Microbial Ecology in Health and Disease, 9(4), pp. 157–166. doi:
10.3109/08910609609166456.

Gede, P. & Wira, R. (2021) 'Review Artikel : Aktivitas Imunomodulator Ekstrak Herba Meniran
(*Phyllanthus niruri* L .)', 4(1), pp. 44–52.

Geoffrey, C. R. (2015) 'Immunology : A Short Course', *Proquest Ebook Central*.

Gotovina, J. (2020) 'Epinephrine drives human M2a allergic macrophages to a regulatory
phenotype reducing mast cell degranulation in vitro', *Allergy: European Journal of
Allergy and Clinical Immunology*, 75(11), pp. 2939–2942. doi: 10.1111/all.14299.

Handayani, N. (2018) 'Uji Aktivitas Fagositosis Makrofag Ekstrak Etanol Daun Suji (*Dracaena
angustifolia* (Medik.)Roxb.) SECARA IN VITRO', *Jurnal Farmasi Medica/Pharmacy
Medical Journal (PMJ)*, 1(1), pp. 26–32. doi: 10.35799/pmj.1.1.2018.19648.

Handini, A. F., Pratiwi, R. & Sunnah, T. D. (2021) 'Regenerasi Sel Ligamen Periodontal
Dengan Kolagen Sisik Ikan Nila (*Oreochromis niloticus*)', *Jurnal Medali*, 3(1), p. 44. doi:
10.30659/medali.v3i1.16767.

Härtel, C. & Strunk, T. (2004) 'Effects of vitamin C on intracytoplasmic cytokine production in
human whole blood monocytes and lymphocytes', *Cytokine*, 27(4–5), pp. 101–106. doi:
10.1016/j.cyto.2004.02.004.

Hartini, Y. (2014) 'Uji Aktivitas Fagositosis Makrofag Fraksi-Fraksi dari Ekstrak Metanol Daun
Sirih Merah (*Piper Crocatum* Ruiz & Pav) Secara in Vitro', *Jurnal Ilmu Kefarmasian
Indonesia*, 11(2).

Holmes, D. F., Lu, Y., & Starborg. (2018) 'Collagen Fibril Assembly and Function', in *Current
Topics in Developmental Biology*. Academic Press Inc., pp. 107–142. doi:
10.1016/bs.ctdb.2018.02.004.

Spons *Callyspongia* Sp. Terhadap Fagositosis Makrofag Pada Mencit Jantan Balb/C',
Jurnal Ilmiah Ibnu Sina, 5(1), pp. 44–55.

Kelly-Quagliana, K. A., Nelson, P. D. & Buddington, R. K. (2003) 'Dietary oligofructose and inulin modulate immune functions in mice', *Nutrition Research*, 23(2), pp. 257–267. doi: 10.1016/S0271-5317(02)00516-X.

Kurnia, A. N. A. (2015) 'Pengaruh Penambahan Teh Hijau Terhadap Aktivitas Antioksidan dan Kadar Protein Minuman Fungsional Susu Kedelai dan Madu', *Journal of Nutrition College*, 4(2), pp. 526–569.

Lestari, L., Soesatyo, M., & Iravati. (2012) 'Peningkatan aktivitas fagositosis dan produksi nitrit oksida pada makrofag peritoneum tikus Sprague Dawley yang diberi *Lactobacillus plantarum* Mut7 dan ekstrak serat ubi jalar', *Jurnal Gizi Klinik Indonesia*, 9(2), p. 64. doi: 10.22146/ijcn.15381.

Lima, C. A., Campos, J., Filho, J., Da Cunha, M., & Porto, A. (2015) 'Antimicrobial and radical scavenging properties of bovine collagen hydrolysates produced by *Penicillium aurantiogriseum* URM 4622 collagenase', *Journal of Food Science and Technology*, 52(7), pp. 4459–4466. doi: 10.1007/s13197-014-1463-y.

Manon-Jensen, T., Kjeld, N. G. & Karsdal, M. A. (2016) 'Collagen-mediated hemostasis', *Journal of Thrombosis and Haemostasis*, 14(3), pp. 438–448. doi: 10.1111/jth.13249.

Minah, F. (2016) 'Ekstraksi Gelatin dari Hidrolisa Kolagen Limbah Tulang Ikan Tuna dengan Variasi Jenis Asam dan Waktu Ekstraksi', *SENIATI Institut Teknologi Nasional Malang*, pp. 26–32.

Murwanti, R. (2018) Pengaruh Aneka Sajian Minuman Kopi Robusta Terhadap Aktivitas dan Kapasitas Fagositosis Sel Makrofag Peritonium Mencit yang Diinduksi *Bacillus cereus*, *Prosiding Ekonomi Kreatif di Era Digital*.

- Nisrina, P. & Deny, Y. F. (2012) 'Pengaruh Ekstrak Lompong Mentah (*Colocasia Esculenta* L Schoot) Terhadap Aktivitas Fagositosis dan Kadar No (Nitrit Oksida) Mencit Balb/C Sebelum dan Sesudah Terinfeksi *Listeria Monocytogenes*', *Journal of Nutrition College*, 1, pp. 607–613.
- Nurfitasari, I. (2018) 'Pengaruh Penambahan Kitosan Dan Gelatin Terhadap Kualitas Biodegradable Foam Berbahan Baku Pati Biji Nangka (*Artocarpus heterophyllus*)', pp. 1–2.
- O Santoso, SW Prayitno, S. W. (2018) 'Perubahan Pola Kadar Interleukin-1 β , Fungsi Fagositosis Dan Status Periodontium Pada Penyandang Diabetes Melitus Tipe 2', *Journal of Dentristry*.
- Peshev, D. & Van den Ende, W. (2014) 'Fructans: Prebiotics and immunomodulators', *Journal of Functional Foods*, 8(1), pp. 348–357. doi: 10.1016/j.jff.2014.04.005.
- Prastyo, D. T. & Trilaksani, W. (2020) 'Aktivitas Antioksidan Hidrolisat Kolagen Kulit Ikan Nila (*Oreochromis niloticus*)', *Jurnal Pengolahan Hasil Perikanan Indonesia*, 23(3), pp. 423–433. doi: 10.17844/jphpi.v23i3.31732.
- Putra, A. B. N., Morishoge, H., & Nishimoto (2012) 'Effect of collagens from jellyfish and bovine Achilles tendon on the activity of J774.1 and mouse peritoneal macrophage cells', *Journal of Functional Foods*, 4(2), pp. 504–512. doi: 10.1016/J.JFF.2012.02.011.
- Putri, O. K. (2020) 'Aktivitas sitotoksik, antioksidan dan adipogenesis hidrolisat kolagen dari ceker ayam', 9(2), pp. 113–130.
- Regina Satya Wiraharja (2021) *Peranan ilmu kesehatan masyarakat dalam penanganan covid-19* - Google Books. Available at: https://books.google.co.id/books?hl=en&lr=&id=JowaEAAAQBAJ&oi=fnd&pg=PA9&dq=inulin+scfa+sistem+imun&ots=ATbMJlKrfn&sig=niZNF8X1SYKiJaZavR7izGk5Hog&redir_esc=y#v=onepage&q&f=false (Accessed: 23 October 2021).

Litopenaeus vannamei yang Diberi Pakan dengan Suplementasi Prebiotik FOS (Fruktooligosakarida)', *Buletin Oseanografi Marina*, 2(4), pp. 1–8. doi: 10.14710/buloma.v2i4.11166.

Rosalinda, R. A. S. (2018) 'Morfologi Eosinofil Pada Apusan Darah Tepi Menggunakan Pewarnaan Giemsa, Wright, Dan Kombinasi Wright-Giemsa', *Jurnal Surya Medika*, 3(2), pp. 5–12.

Rosana, D. (2013) 'Struktur Dan Fungsi Protein Dan Enzim', *Biofisika*, 2(5), p. 54. Available at: <http://staffnew.uny.ac.id/upload/132058092/pendidikan/modul-2-struktur-dan-fungsi-protein.pdf>.

Ruiz-Alcaraz, A. J., Cormona, V. & Tristan-Marzano, M. (2018) 'Characterization of human peritoneal monocyte/macrophage subsets in homeostasis: Phenotype, GATA6, phagocytic/oxidative activities and cytokines expression', *Scientific Reports*, 8(1), pp. 1–14. doi: 10.1038/s41598-018-30787-x.

Senditya, M., Hadi, M. & Estiasih (2014) 'Efek Prebiotik Dan Sinbiotik Simplisia Daun Cincau Hitam (*Mesona palustris* BL) Secara In Vivo : Kajian Pustaka In Vivo Prebiotic and Synbiotic Effect of Black Grass Jelly (*Mesona palustris* BL) Leaf Simplicia : A Review', 2(3), pp. 141–151.

Shigemura, Y. (2018) 'A pilot study for the detection of cyclic prolyl-hydroxyproline (Pro-Hyp) in human blood after ingestion of collagen hydrolysate', *Nutrients*, 10(10). doi: 10.3390/nu10101356.

Skov, K., Oxfeld, M. & Thogersen, R. (2019) 'Enzymatic hydrolysis of a collagen hydrolysate enhances postprandial absorption rate—a randomized controlled trial', *Nutrients*, 11(5). doi: 10.3390/nu11051064.

Suhirman, S. C. W. (2017) 'Prospek dan Fungsi Tanaman Obat Sebagai Imunomodulator',

- Tominaga, T. (2019) 'Glucose ingestion inhibits endurance exercise-induced IL-6 producing macrophage infiltration in mice muscle', *Nutrients*, 11(7). doi: 10.3390/nu11071496.
- Ukhrowi, U. (2011) 'Pengaruh Pemberian Ekstrak Etanol Umbi Bidara Upas (*Merremia mammosa*) Terhadap Fagositosis Makrofag Dan Produksi Nitrit Oksida (No) Makrofag Studi pada mencit Balb/c yang Diinfeksi *Salmonella typhimurium*', *Masters thesis, Diponegoro University*.
- W Sriningsih, A. E. (2006) 'Efek protektif pemberian ekstrak etanol herba meniran (*Phyllanthus niruri* L.) terhadap aktivitas dan kapasitas fagositosis makrofag peritoneum tikus', *Media Pharmaceutica Indonesiana*.
- Wahyu, S. (2020) 'Efektifitas Pemberian Ekstrak Kayu Secang (*Caesalpinia sappan* L) Terhadap Ekspresi Gen M-RNA, High Motility Group Box 1 (Hmgb1) , Interleukin-6 Dan Interleukin-10 Pada Mencit Balb/c Dengan Candidiasis Vulvovaginalis', *Disertasi-S3 thesis, Universitas Hasanuddin*.
- Wesley, R. B. Meng, X. & Godin, D. (1998) 'Extracellular matrix modulates macrophage functions characteristic to atheroma: Collagen type I enhances acquisition of resident macrophage traits by human peripheral blood monocytes in vitro', *Arteriosclerosis, Thrombosis, and Vascular Biology*, 18(3), pp. 432–440. doi: 10.1161/01.ATV.18.3.432.
- Widjaja, H. (2012) 'Medica Hospitalia terhadap Aktifitas Fagositosis Makrofag dan Kadar Vitamin C', 1(2), pp. 123–126.
- Y Kawano, T. N. & J. Y. (1994) 'Regulation of human IgG subclass production by cytokines. IFN-gamma and IL-6 act antagonistically in the induction of human IgG1 but additively in the induction of IgG2', *The Journal of Immunology*.
- Zhang, B., Yeo, R., & Lai, R. (2018) 'Mesenchymal stromal cell exosome-enhanced regulatory T-cell production through an antigen-presenting cell-mediated pathway', *Cytotherapy*,



Efek Pemberian Minuman Fungsional dengan Kandungan Kolagen Ikan terhadap Aktivitas Makrofag secara In Vitro

RINCHA MILENIO T A S, Lily Arsanti Lestari, Mae Sri Hartati Wahyuningsih

Universitas Gadjah Mada, 2022 | Diunduh dari <http://etd.repository.ugm.ac.id/>

20(5), pp. 687–696. doi: 10.1016/J.JCYT.2018.02.372.