

BAB 5

KESIMPULAN DAN SARAN

5.1 Kesimpulan

1. Penggunaan butiran kefir air berulang kali terhadap kefir air ekstrak buah naga dengan penambahan inulin-MCT media sukrosa tidak memberikan pengaruh signifikan terhadap kadar total fenol namun total asam mempengaruhi keasamannya.
2. Penggunaan sukrosa sebagai media fermentasi mempengaruhi tingkat keasaman minuman fermentasi kefir air ekstrak buah naga dengan penambahan inulin-MCT dimana rata-rata total asam pada sampel tanpa sukrosa ($0,461\% \pm 0,010$) lebih tinggi dibandingkan dengan sampel yang menggunakan sukrosa ($0,399\% \pm 0,054$).

5.2 Saran

1. Penelitian dapat dilakukan untuk melihat sampai mana efektivitas butiran kefir air dalam fermentasi kefir air.
2. Penelitian dapat dilakukan analisis terkait dengan nutrisi yang dihasilkan dari berbagai jenis substrat.

DAFTAR PUSTAKA

- Abirami, K., Swain, S., Baskaran, V., Venkatesan, K., Sakthivel, K., & Bommayasamy, N. (2021). Distinguishing three Dragon fruit (*Hylocereus* spp.) species grown in Andaman and Nicobar Islands of India using morphological, biochemical and molecular traits. *Scientific Reports*, **11**(1).
- Alves, V., Scapini, T., Camargo, A. F., Bonatto, C., Stefanski, F. S., Pompeu de Jesus, E., Techi Diniz, L. G., Bertan, L. C., Maldonado, R. R., & Treichel, H. (2021). Development of fermented beverage with water kefir in water-soluble coconut extract (*Cocos nucifera* L.) with inulin addition. *LWT*, **145**.
- Arivalagan, M., Karunakaran, G., Roy, T. K., Dinsha, M., Sindhu, B. C., Shilpashree, V. M., Satisha, G. C., & Shivashankara, K. S. (2021). Biochemical and nutritional characterization of dragon fruit (*Hylocereus* species). *Food Chemistry*, **353**.
- Association of Official Analytical Chemists (AOAC). 2002. Guidelines of Validation of Qualitative and Quantitative Food Microbiological Official Method of Analysis. Washington, DC, USA. (4 February 2011).
- Azizi, N. F., Kumar, M. R., Yeap, S. K., Abdullah, J. O., Khalid, M., Omar, A. R., Osman, M. A., Mortadza, S. A. S., & Alitheen, N. B. (2021). Kefir and its biological activities. In *Foods*. **10**(6). MDPI AG.
- Bozkir, E., Yilmaz, B., Sharma, H., Esatbeyoglu, T., & Ozogul, F. (2024). Challenges in water kefir production and limitations in human consumption: A comprehensive review of current knowledge. In *Heliyon*. **10**(13). Elsevier Ltd.
- Cai, Y., Sounderrajan, A., & Serventi, L. (2020). Water Kefir: A Review of its Microbiological Profile, Antioxidant Potential and Sensory Quality. *ACTA SCIENTIFIC NUTRITIONAL HEALTH*, **4**(6), 1–8.
- Çevik, T., Aydoğdu, N. S., Özdemir, N., & Kök Taş, T. (2019). The Effect of Different Sugars on Water Kefir Grains. *Turkish Journal of Agriculture - Food Science and Technology*, **7**, 40–45.
- Chong, A. Q., Lau, S. W., Chin, N. L., Talib, R. A., & Basha, R. K. (2023). Fermented Beverage Benefits: A Comprehensive Review and Comparison of Kombucha and Kefir Microbiome. In *Microorganisms* **11**(5). MDPI.

- Cinderela, N. komang D., Nocianitri, K. A., & Hatiningsih, S. (2022). Pengaruh Konsentrasi Sukrosa Terhadap Karakteristik Minuman Probiotik Sari Buah Naga Merah (*Hylocereus polyrhizus*) Terfermentasi dengan Isolat *Lactobacillus* sp. F213. *Itepa: Jurnal Ilmu Dan Teknologi Pangan*, **11**(2).
- Constantin, E.-A., Popa-Tudor, I., Matei, F., Constantinescu-Aruxandei, D., & Oancea, F. (2023). Evaluation of Polyphenol Content and Antioxidant Activity of Standard Water Kefir. *Chemistry Proceedings*, **7**.
- De Almeida, K. V., Zanetti, V. C., Camelo-Silva, C., Alexandre, L. A., da Silva, A. C., Verruck, S., & Teixeira, L. J. Q. (2024). Powdered water kefir: Effect of spray drying and lyophilization on physical, physicochemical, and microbiological properties. *Food Chemistry Advances*, **5**.
- Depkes RI. Farmakope Indonesia edisi VI. Departemen Kesehatan Republik Indonesia. Jakarta: Kementrian Kesehatan Republik Indonesia; 2020
- Esatbeyoglu, T., Fischer, A., Legler, A. D. S., Oner, M. E., Wolken, H. F., Köpsel, M., Ozogul, Y., Özyurt, G., De Biase, D., & Ozogul, F. (2023). Physical, chemical, and sensory properties of water kefir produced from *Aronia melanocarpa* juice and pomace. *Food Chemistry: X*, **18**.
- Feng, S., Xiang, S., Bian, X., & Li, G. (2020). Quantitative analysis of total acidity in aqueous lactic acid solutions by direct potentiometric titration. *Microchemical Journal*, **157**.
- Guzel-Seydim, Z. B., Gökırmaklı, Ç., & Greene, A. K. (2021). A comparison of milk kefir and water kefir: Physical, chemical, microbiological and functional properties. In *Trends in Food Science and Technology* (Vol. **113**, pp. 42–53). Elsevier Ltd.
- Khoo, H. E., Azlan, A., Tang, S. T., & Lim, S. M. (2017). Anthocyanidins and anthocyanins: Colored pigments as food, pharmaceutical ingredients, and the potential health benefits. In *Food and Nutrition Research* (Vol. **61**). Swedish Nutrition Foundation.
- Kurniawidi, T., & Utomo, D. (2021). Pengaruh konsentrasi starter dan macam buah terhadap karakteristik kefir air. *Teknologi Pangan : Media Informasi Dan Komunikasi Ilmiah Teknologi Pertanian*, **12**(2), 296–304.

- Laureys, D., Leroy, F., Vandamme, P., & De Vuyst, L. (2022). Backslopping Time, Rinsing of the Grains During Backslopping, and Incubation Temperature Influence the Water Kefir Fermentation Process. *Frontiers in Microbiology*, **13**.
- Lim, T. W., Choo, K. Y., Lim, R. L. H., Pui, L. P., Tan, C. P., & Ho, C. W. (2023). The indigenous microbial diversity involved in the spontaneous fermentation of red dragon fruit (*Hylocereus polyrhizus*) identified by means of molecular tools. *Heliyon*, **9**(11).
- Limbad, M., Gutierrez-Maddox, N., Hamid, N., Kantono, K., Liu, T., & Young, T. (2023). Microbial and Chemical Changes during Fermentation of Coconut Water Kefir Beverage. *Applied Sciences (Switzerland)*, **13**(12).
- Luu, T. T. H., Le, T. L., Huynh, N., & Quintela-Alonso, P. (2021). Dragon fruit: A review of health benefits and nutrients and its sustainable development under climate changes in Vietnam. In *Czech Journal of Food Sciences*. **39**(2), pp. 71–94). Czech Academy of Agricultural Sciences.
- Magalhães, D. S., da Silva, D. M., Ramos, J. D., Salles Pio, L. A., Pasqual, M., Vilas Boas, E. V. B., Galvão, E. C., & de Melo, E. T. (2019). Changes in the physical and physico-chemical characteristics of red-pulp dragon fruit during its development. *Scientia Horticulturae*, **253**, 180–186.
- Maicas, S. (2020). The role of yeasts in fermentation processes. In *Microorganisms*. **8**(8), pp. 1–8). MDPI AG.
- Maryanty, Y., Saputra, F. L. W., & Prasetyo, R. (2019). Pembuatan Asam Laktat dari Selulosa oleh Bakteri *Lactobacillus delbrueckii* dengan Selulase dari Bakteri *Bacillus subtilis* dan *Bacillus circulans*. *Jurnal Teknik Kimia Dan Lingkungan*, **4**(2), 153–161.
- Mukarromah, T. A., Amandha, B. A., & Cempaka, A. R. (2023). Literature Review: The Role of Medium Chain-Triglyceride (MCT) in Improving Lipid Profiles in Dyslipidemia. In *Amerta Nutrition*. **7**(2), pp. 307–316). Airlangga University Faculty of Public Health.
- Nangare DD, Taware PB, Singh Y, Kumar PS, Bal SK, Ali S and Pathak H (2020) Dragon Fruit: A Potential Crop for Abiotic Stressed Areas. Technical Bulletin No. 47. ICAR National Institute of Abiotic Stress Management, Baramati, Pune, Maharashtra, India, pp: **24**

- Nimbkar, S., Leena, M. M., Moses, J. A., & Anandharamakrishnan, C. (2022). Medium chain triglycerides (MCT): State-of-the-art on chemistry, synthesis, health benefits and applications in food industry. In *Comprehensive Reviews in Food Science and Food Safety*. **21(2)**, pp. 843–867). John Wiley and Sons Inc.
- Ningsih, F., & Haris, Muh. I. (2022). Kualitas organoleptik dan kadar antioksidan kefir susu kambing dengan penambahan jus buah naga merah (*hylocereus polyrhizus*) level berbeda. *Jurnal Peternakan Lingkungan Tropis*, **5(1)**, 17–20.
- Nishikito, D. F., Borges, A. C. A., Laurindo, L. F., Otoboni, A. M. M. B., Direito, R., Goulart, R. de A., Nicolau, C. C. T., Fiorini, A. M. R., Sinatora, R. V., & Barbalho, S. M. (2023). Anti-Inflammatory, Antioxidant, and Other Health Effects of Dragon Fruit and Potential Delivery Systems for Its Bioactive Compounds. In *Pharmaceutics*. **15(1)**. MDPI.
- Papadaki, A., Kachrimanidou, V., Lappa, I. K., Eriotou, E., Sidirokastritis, N., Kampioti, A., & Kopsahelis, N. (2021). Mediterranean raisins/currants as traditional superfoods: Processing, health benefits, food applications and future trends within the bio-economy era. In *Applied Sciences (Switzerland)*. **11(4)**, pp. 1–22). MDPI AG.
- Pavlečić, M., Novak, M., Trontel, A., Marđetko, N., Tominac, V. P., Dobrinčić, A., Kralj, M., & Šantek, B. (2024). The Production of Water Kefir Drink with the Addition of Dried Figs in the Horizontal Rotating Tubular Bioreactor. *Foods*, **13(17)**.
- Pendón, M. D., Bengoa, A. A., Iraporda, C., Medrano, M., Garrote, G. L., & Abraham, A. G. (2022). Water kefir: Factors affecting grain growth and health-promoting properties of the fermented beverage. In *Journal of Applied Microbiology*. **133(1)**, pp. 162–180). John Wiley and Sons Inc.
- Pereira, W. A., Piazzentin, A. C. M., da Silva, T. M. S., Mendonça, C. M. N., Figueroa Villalobos, E., Converti, A., & Oliveira, R. P. S. (2023). Alternative Fermented Soy-Based Beverage: Impact of Inulin on the Growth of Probiotic Strains and Starter Culture. *Fermentation*, **9(11)**.
- Pérez, M., Dominguez-López, I., & Lamuela-Raventós, R. M. (2023). The Chemistry Behind the Folin-Ciocalteu Method for the Estimation of (Poly)phenol Content in Food: Total Phenolic Intake in a

- Mediterranean Dietary Pattern. In *Journal of Agricultural and Food Chemistry*. **71(46)**, pp. 17543–17553). American Chemical Society.
- Ridhani, M. A., Vidyaningrum, I. P., Akmala, N. N., Fatihatunisa, R., Azzahro, S., & Aini, N. (2021). POTENSI PENAMBAHAN BERBAGAI JENIS GULA TERHADAP SIFAT SENSORI DAN FISIKOKIMIA ROTI MANIS: REVIEW. *Pasundan Food Technology Journal (PFTJ)*, **8(3)**.
- Rizqiati, H., Nurwantoro, N., & Bramadita, A. M. (2023). Physicochemical, Microbiological and Organoleptic Characteristics of Rosella Water Kefir with Sucrose Sweetener. *Jurnal Teknologi Hasil Pertanian*, **16(2)**, 84.
- Sabokbar, N., & Khodaiyan, F. (2016). Total phenolic content and antioxidant activities of pomegranate juice and whey based novel beverage fermented by kefir grains. *Journal of Food Science and Technology*, **53(1)**, 739–747.
- Şafak, H., Gün, İ., Tudor Kalit, M., & Kalit, S. (2023). Physico-Chemical, Microbiological and Sensory Properties of Water Kefir Drinks Produced from Demineralized Whey and Dimrit and Shiraz Grape Varieties. *Foods*, **12(9)**.
- Santos, D. C. dos, Oliveira Filho, J. G. de, Santana, A. C. A., Freitas, B. S. M. de, Silva, F. G., Takeuchi, K. P., & Egea, M. B. (2019). Optimization of soymilk fermentation with kefir and the addition of inulin: Physicochemical, sensory and technological characteristics. *LWT*, **104**, 30–37.
- Sholichah, K., Priyo, V., Dan, B., & Rizqiati, H. (2019). Analisis Karakteristik Kefir Optima dengan Menggunakan Bibit Praktis Terhadap Nilai pH, Total Bal, Total Padatan Terlarut dan Organoleptik. *Jurnal Teknologi Pangan*, **3(2)**, 286–291.
- Soult, A. (2024). *CHEMISTRY FOR ALLIED HEALTH*.
- Standar Nasional Indonesia (2009). SNI 7552 (2009) minuman susu fermentasi berperisa
- Subbalakshmi, Devika, H. R., Harsha, K. M., Kalpana, R., Shet, K. G., & Rashmi, D. (2024). Development of a Fermented Probiotic Beverage Inoculated with Kefir Grain. *Asian Journal of Dairy and Food Research*.

- Tjahjono, Y., Foe, K., Ratnasari Wilianto, Y., Christianto Khudrati, W., Yesery Esar, S., Jafet, N., Made Andika Bara Kusuma, I., Ade, L., Dian Novita, B., Wihadmadyatami, H., Handayani Tjan, L., Nugraha, J., Santoso, S., & Wijaya, H. (2024). HP inulin-MCT dietary fiber improves lipid metabolism and prevents non-alcoholic steatohepatitis in obese mice. *Journal of Functional Foods*, **120**.
- Watanabe, S., & Tsujino, S. (2022). Applications of Medium-Chain Triglycerides in Foods. In *Frontiers in Nutrition* (**9**). Frontiers Media S.A.