BAB 5
KESIMPULAN DAN SARAN

5.1 Kesimpulan

Berdasarkan hasil penelitian yang dilakukan, dapat disimpulkan:

1. Sintesis senyawa 2,5-dibenzilidensiklopentanon dengan katalis HCl - asam borat menghasilkan rendemen sebesar 78,46% selama 50 menit.
2. Sintesis senyawa 2,5-bis-(4-hidroksibenziliden)siklopentanon dengan katalis HCl - asam borat menghasilkan rendemen sebesar 84,91% selama 40 menit.
3. Penambahan substituen 4-hidroksi menyebabkan sintesis senyawa 2,5-bis-(4-hidroksibenziliden)siklopentanon dengan katalis HCl - asam borat berlangsung lebih cepat ditinjau dari lama waktu reaksi.

5.2 Saran

1. Pada sintesis senyawa 2,5-bis-(4-hidroksibenziliden)siklopentanon, disarankan agar setiap langkah kerja dilakukan secara konsisten dan memastikan tidak ada produk yang tertinggal. Hal ini bertujuan untuk memperoleh rendemen yang lebih konsisten antar ulangan dan mengurangi variasi data yang besar.

DAFTAR PUSTAKA

Adabella, E., Oei, C. A. W., Rantetasak, V. A., Budiati, T., and Soewandi, A. 2024, Microwave-assisted synthesis of bis-(hydroxybenzylidene)-cycloalkanones via acid catalyzed Claisen-Schmidt condensation, *Chemistry & Chemical Technology*, **18(3):** 350-355.

Alolga, R., Wang, F., Zhang, X., Li, J., Tran, L., and Yin, X. 2022, Bioactive Compounds from the Zingiberaceae Family with Known Antioxidant Activities for Possible Therapeutic Uses, *Antioxidants,* **11(7):** 1281.

Amalraj, A., Pius, A., and Gopi, S. 2017, Biological activities of curcuminoids, other biomolecules from turmeric and their derivatives, A review, *In Journal of Traditional and Complementary Medicine*, **7(2):** 205–233.

Anisa, D. N., Anwar, C. dan Afriyani, H. 2020, Sintesis senyawa analog kurkumin berbahan dasar veratraldehida dengan metode ultrasound, *Analit:Analytical and Environmental Chemistry*, **5(1):** 74-81.

Anisa, D. N., Utami, G. N., dan Hidayat, D. 2022, Sintesis senyawa analog kurkumin monoketon dengan variasi konsentrasi katalis KOH, *Analit: Analytical and Environmental Chemistry*, **7(1):** 13-20.

Astuti, E., Raharjo, T. J., Boangmanalu, P. M., Putra, I. S. R., Waskitha, S. S. W., and Solin, J. 2021, Synthesis, Molecular Docking, and Evaluation of Some New Curcumin Analogs as Antimalarial Agents, *Indones. J. Chem*., **21(2):** 452-461.

Bele, A. A. and Khale, A. 2011, An Overview on Thin Layer Chromatography, *International Journal of Pharmaceutical Sciences and Research*, **2(2):** 256-267.

Budimarwanti, C dan Handayani, S. 2010, 'Efektivitas Katalis Asam Basa pada Sintesis 2-hidroksikalkon, Senyawa yang Berpotensi sebagai Zat Warna'. *Prosiding seminar nasional Kimia dan Pendidikan Kimia 2010*. ISBN: 978-979-98117-7-6, pp. 2-10.

Hao, M., Chue, Y., Lei, J., Yao, Z., Wang, P., Chen, Z., Wang, K., Sang, X., Han, X., Wang, L., and Chao, G. 2023, Pharmacological Mechanisms and Clinical Applications of Curcumin: Update, *Aging and Disease*, **14(3):** 716-749.

Karimi-Jaberi, Z and Fakhraei, H. 2012, Synthesis of 1-amidoalkyl-2-naphthols based on a three-component reaction catalyzed by boric acid as a solid heterogeneous catalyst under solvent-free conditions, *Bulletin of Chemical Society of Ethiopia*, **26(3):** 473-478.

Kotha, R., Luthria, D., 2019, Curcumin: Biological, Pharmaceutical, Nutraceutical, and Analytical Aspects, *Molecules,* **24(16):** 2930.

Liang, G., Yang, S., Jiang, L., Zhao, Y., Shao, L., Xiao, J., Ye, F., Li, Y. and Li, X. 2008, Synthesis and anti-bacterial properties of mono-carbonyl analogues of curcumin. *Chemical and Pharmaceutical Bulletin*, **56(2):** 162-167.

Liu, S., Liu, J., He, L., Liu, L., Cheng, B., Zhou, F., Cao, D. and Dia, Y. 2022, A Comprehensive Review on the Benefits and Problems of Curcumin with Respect to Human Health, *Molecules*, **27(14):** 4400.

Lopresti. A. L. 2018, The Problem of Curcumin and Its Bioavailability: Could Its Gastrointestinal Influence Contribute to Its Overall Health-Enhancing Effects?, *American Society for Nutrition*, **9:** 41-50.

Martha, R. D., Wahyuningsih, T. D. dan Anwar, C. 2020, Sintesis analog kurkumin 2,6-bis-(E)-4-hidroks-3-metoksibenzilidin)-sikloheksa-1-on berbahan dasar vanilin dengan katalis HCl, *Jurnal Penelitian Saintek*, **25(2):** 195-204.

McMurry, J. 2016, *Organic Chemistry*, 9th ed., Thomson Brooks/Cole, USA, pp 798-801, 828-839, 852-853.

Mohrig, J.R., Hammond, C.N. and Schatz, P.F. 2010, *Techniques in Organic Chemistry*, W.H Freeman and Company, USA, pp 212-218.

Murtisiwi, L. 2012, Sintesis 2,5-bis(4-hidroksibensilidin) siklopentanon dari p-hidroksibenzaldehid dan Siklopentanon dengan Katalis Asam Sulfat, *Journal of Pharmacy*, **1(1):** 1-12

Nafillah, K. dan Anwar, C. 2023, Karakteristik dan Studi Sinergi Analog Kurkumin dari Senyawa 4-Metoksibenzaldehida sebagai Antidiabetes dengan Metode Iodin, *Indonesian Journal of Pure and Applied Chemistry,* **6(3):** 101-113.

O`Neil, M. 2001, The Merck Index, 13th ed., Merck and Co., Inc., USA, pp 181, 223, 361, 478, 861-862.

Pal, R. 2018, Boric acid in organic synthesis: Scope and recent developments. *Arkivoc*, pp 346-371.

Pavia, D.L., Lampman, G.M., Kriz, G.S. and Vyvyan, J.R., 2009, *Introduction to Spectroscopy*, 4th eds, Brooks/Cole Cengange Learning, Belmont, pp 304-501.

Priyadarsini, K. I. 2014, The chemistry of curcumin: From extraction to therapeutic agent. Molecules, **19(12):** 20091-20112.

Pudjono, S dan Irawati, T. 2006, Sintesis 2,5-dibenzilidinsiklopentanon dari Benzaldehid dan Siklopentanon dengan Variasi Pelarut, *Majalah Farmasi Indonesia*. **17(1):** 45-49

Rahmat, E., Lee, J., and Kang, Y. 2021, Javanese Turmeric (*Curcuma xanthorrhiza* Roxb.): Ethnobotany, Phytochemistry, Biotechnology, and Pharmacological Activities, *Evid Based Complement Alternat Med,* **2021(1):** 7-10.

Rantetasak, V., 2022, 'Pengaruh Gugus 4-hidroksibenzaldehid pada Sintesis 2,5-bis(4-hidroksi-3-metoksibenziliden)siklopentanon', Skripsi, Sarjana Farmasi, Universitas Katolik Widya Mandala Surabaya.

Roopesh, Jain. 2020, Biological Activities of Bisdesmethoxycurcumin, *In Journal of Nature and Science of Medicine,* **3(3):** 219-220.

Sankhavara, D. B., Chopda, Jalpa V., Patel, J. P. and Parsania, P. H. 2019, Synthesis, spectral and thermal study of (2E, 6E) 2,6-bis(4-hydroxy benzylidene)-4-R-cyclohexanone, *World Scientific News,* **123:** 141-160.

Siswandono, E. 2016*, Kimia Medisinal,* Edisi 2. Airlangga University Press, pp 227-244.

Skoog, D. A., Holler, F. J. and Crouch, S. R. 2016, Principle of Instrumental Analysis, 7th ed., Cengage Learning, USA, pp 454-488.

Sohn, S., Priya, A., Balasubramaniam, B., Muthuramalingam, P., Sivasankar, C., Selvaraj, A., Valliammai, A., Jothi, R. and Pandian, S. 2021, Biomedical Applications and Bioavailability of Curcumin—An Updated Overview, *Pharmaceutics,* **13(12):** 2102.

Subositi, D. and Wahyono, S. 2019. Study of the genus curcuma in Indonesia used as traditional herbal medicines, *Biodiversitas*, **20(5):** 1356-1361.

Suksaeree, J. and Monton, C. 2024, Maximizing Curcuminoid Extraction from *Curcuma aromatica* Salisb. Rhizomes via Environmentally Friendly Microwave-Assisted Extraction Technique Using Full Factorial Design, *International Journal of Food Science*, **2024(1):** 1-3.