

DAFTAR PUSTAKA

- Abigor, R.D., Uadia, P.O., Foglia, T.A., Haas, M.J., Karen, S. and Savary, B.J., 2002, Partial Purification and Properties of Lipase from Germinating Seeds of *Jatropha curcas* L., *J. Am. Oil. Chem. Soc.*, 11(79), 1123-1126.
- Anonim, 2008, *Taksonomi Koleksi Tanaman Obat Kebun Tanaman Obat Citeureup*, Badan POM RI, Jakarta.
- Anonim, 2015, *Syarat Mutu Biodiesel SNI 7182-2015*, Badan Standarisasi Nasional Indonesia.
- Akoh, C.C., Chang, S.W., Lee, G.C. and Shaw, J.F., 2007, Enzymatic Approach to Biodiesel Production, *J. Agric. Food Chem.*, 55, 8995-9005.
- Amalia, R., Bulan, R. dan Sebayang, F., 2013, Penentuan pH dan Suhu Optimum untuk Aktivitas Ekstrak Kasar Enzim Lipase dari Kecambah Biji Karet (*Hevea brasiliensis*) terhadap Hidrolisis PKO (Palm Kernel Oil), *Jurnal Saintia Kimia*, 2(1), 1-7.
- Artemisia, A.E., 2015, Transesterifikasi Minyak Jelantah dengan Katalis Lipase Teriimobilisasi pada Kitosan Bead, *Tesis*, Program Studi S2 Ilmu Kimia Fakultas Matematika dan Ilmu Pengetahuan Alam Universitas Gadjah Mada, Yogyakarta.
- Avelar, M.H.M., Cassimiro, D.M.J., Santos, K.C., Domingues, R.C.C., Castro, H.F. and Mendes, A.A., 2013, Hydrolysis of Vegetable Oil Catalyzed by Lipase Extract Powder from Dormant Castor Bean Seeds, *Ind. Crop. Prod.*, 44, 452-458.
- Badgujar, S.B., Patel, V.V. and Bandivdekar, A.H., 2014, *Foeniculum vulgare* Mill: A Review of its Botany, Phytochemistry, Pharmacology, Contemporary Application, and Toxicology, BioMed Research International, Hindawi Publishing Corporation.
- Baros, M., Fleuri, L.F. and Macedo, G.A., 2010, Seed Lipase: Sources, Applications and Properties-A Review, *Braz. J. Chem. Eng.*, 01(27), 15-29.
- Basumatary, S., 2015, Transesterification with Heterogeneous Catalyst in Production of Biodiesel: A Review, *J. Chem. Pharm. Res.*, 5(1), 1-7.
- Bouaid, A., Vazquez, R., Martinez, M. and Aracil, J., 2016, Effect of Free Fatty Acid Contents on Biodiesel Quality. Pilot Plant Studies, *Fuel*, 174, 54-62.
- Fagain, C.O., 1996, *Storage of Pure Proteins*, Dalam : Protein Purification Protocols, Doonan (Ed) Humana Press Inc, Totowa New Jersey.

- Gao, L., Teng, Guangyuan, Xiao, G. and Wei, R., 2010, Biodiesel from Palm Oil Via Loading KF/Ca-Al Hidrotalcite Catalyst, *Biomass. Bioenerg.*, 34, 1283-1288.
- Gedge, P.P., Mahadhikar, S.D., Yewle, J.N., Jadhav, U.U., Chougale, A.D., Zambre, V.P. and Padul, M.V., 2011, Biochemical Studies of Lipase from Germinating Oil Seeds, *Am. J Biochem. Biotechnol.*, 7(3), 141-145.
- Ilmi, M., Hommes, A., Winkelman, J.G.M., Hidayar, C. and Heeres, H.J., 2016, Kinetic Studies o the Transesterification of Sunflower Oil with 1-butanol catalyzed by *Rhizomucor miehei* Lipase in a Biphasic Aqueous-organic System, *Biochem. Eng. J.*, 114, 110-118.
- Kawakami, K., Yasuhiro, O. and Takahashi, R., 2011, Application of a Bulkholderia Cepacia Lipase Immobilized Silica Monolith to Batch and Continous Biodiesel Production with a Stoichiometric Mixture of Methanol and Crude *Jatropha* Oil, *Biotech. Biofuels.*, 4(2), 1-11.
- Kardinan, A. dan Dhalimi, A., 2010, Potensi Adas (*Foeniculum vulgare*) sebagai Bahan Aktif Lotion Anti Nyamuk Demam Berdarah (*Aedes aegypti*), *Buletin Littro*, 21,61-68.
- Klibanov, A.M., 1986, Enzyme Work in OrgnicSolvent, *Chemtech*, 16, 354-359.
- Kojong, V.O., Sangi, M.S. dan Pontoh, J., 2013, Uji Kualitas Minyak Biji Adas (*Foeniculum vulgare*) yag diperoleh dengan Metode Soxhletasi, *Jurnal MIPA USRAT Online*, 2 (2), 124-127.
- Kusdarwati, R., Sari, L. dan Mukti, T., 2010, Daya Anti Bakteri Ekstrak Buah Adas (*Foeniculum vulgare*) terhadap Bakteri *Micrococcus luteus* secara *Invitro*, *Jurnal Ilmiah Perikanan*, 2, 31-35.
- Kuo, T.C., Shaw, J.F. and Lee, G.C., 2015, Conversion of Crude *Jatropha curcas* Seed Oil into Biodiesel using Liquid Recombinant *Candida rugosa* Lipase Isozymes, *Bioresource Technol.*, 192, 54-59.
- Lotti,M. and Alberghina, L., 2007, *Lipase: Molecular Structurre and Funnction*, J. Polania and MacCabe(eds), Springer, 263-281.
- Maneerug, T., Kawi, S., Dai, Y. and Wang, C., 2016, Sustainable Biodiesel Production via Transesterification of Waste Cooking Oil using Catalysts Prepared from Chiken Manure, *Energ. Convers. Manage.*, 123, 487-497.
- Manurung, R., 2006, Transesterifikasi Minyak Nabati, *Jurnal Teknologi Proses*, 5(1), 47-52.

- Mata, T.M., Sousa, I.R.B.G. and Caetano, N.S., 2012, Transgenig Corn Oil for Biodiesel Production via Enzymatic Catalysis with Ethanol, *Chem. Eng. Trans.*, 27, 19-24.
- Mulyani, S., Suhendra, L., Anggreini, A.A.D. dan Permana, IDG.M., 2010, Aktivitas Lipase Beberapa Kecambah Biji sebagai Biokatalisator Sintesa Ester Metil Asam Lemak, *Proseding Semiar Nasional APTA*.
- Mosser, B.R., Zheljaskov, V.D., Bakota, E.L., Evangelista, R.L., Gawde, A., Cantrell, C.L., Winker-Moser, J.K., Hristov, A.N., Astatkie, T. and Jeliaskova, E., 2014, Method for Obtaining Three Products with Different Properties from Fennel (*Foeniculum vulgare*) Seed, *Ind. Corp. Prod.*, 60, 335-342.
- Mounguengui, R.W.M., Brunschwig, C., Barea, B., Villeneuve, P. and Blin, J., 2013, Are Plant Lipases a Promising Alternative to Catalyze Transesterification for Biodiesel Production, *Prog. Energ. Combust.*, 39, 441-456.
- Permana, IDG.M., 2013, Isolasi dan Karakterisasi Lipase dari Biji Kakao untuk Sintesis Cocoa Better Equivalent, *Disertasi*, Fakultas Teknologi Pertanian, Universitas Gadjah Mada.
- Polania, J. and MacCabe, A.P., 2007, *Industrial Enzyme Structure, Function and Applications*, Springer. Nettherland.
- Primadevi, S., 2012, Imobilisasi Lipase Chitosan Bead dengan Teknik Pegikatan Silang: Pengaruh pH dan Konsentrasi Kitosan terhadap Aktivitas Transesterase, *Tesis*, FMIPA, UGM, Yogyakarta.
- Riberio, B.D., de Castro, A.M., Coelho, M.A.Z. and Fiere, D.M.G., 2001, Production and Use of Lipase in Bioenergy: A Review from the Feedstocks to Biodiesel Production, *Enzyme., Res.*, 1-6.
- Romdhane, I.B.B., Romdhane, Z.B., Gargouri, A. and Belghith, H., 2011, Esterification Activity and Stability of *Talaromyces Thermopilus* Lipase Immobilized onto Chitosan, *J. Mol. Catal. B: Enzyme*, 68, 230-239.
- Rupey, J.A., Gratto, E. and Careri, G., 1983, Water and Globular Proteins, *Trends Biochem. Sci.*, 8, 18-22.
- Saktiwansyah, E., 2001, Karakterisasi Enzim Lipase Intraseluler dengan Aktivitas Esterifikasi dari Kapang *Rhizopus Oryzae*, *Skripsi*, Institut Pertanian Bogor, Bogor.
- Santos, C.K., Cassimiro, D.M.J., Avelar, M.H.M., Hirata, D.B., de Castro, H.F., Fernandes-Lafuente, R. and Mendes, A.A., 2013, Characterization of the Catalytic Properties of Lipase from Plant Seeds for the Production of

Concentrated Fatty Acids from Different Vegetable Oils, *Ind. Corp. Prod.*, 49, 462-470.

Schuchardt, U., Sercheli, R. and Vargas, R.M., 1998, Transesterification of Vegetable Oils: a Review, *J. Braz. Chem. Soc.*, 9, 199-210.

Shah, S., Sharma, S. and Gupta, M.N., 2004, Biodiesel Preparation by Lipase-catalyzed Transesterification of *Jatropha* Oil, *Energ. Fuels.*, 18, 154-662.

Sharma, R., Chisti, Y. and Banerjee, U.C., 2001, Production, Purification, Chacacterization, and Application of Lipases, *Biotechnol. Adv.*, 19, 627-662.

Shimada, Y.J., Ogawa J., Watabe, Y., Nagao T., Kawashima, A., Kobayashi, T., and Shimuzu, S., 2003, Regiospesific Analysis by Ethanolysis of Oil with Immobilized *Candida antartica* Lipase, *Lipid*, 38 (12), 1281-1286.

Senanayake, S.P.J.N. and Shahidi, F., 2000, Lipid Componenets of Borage (*Borago officinalis* L.) Seeds and Their Changes During Germination, *J. Am. Oil. Chem. Soc.*, 1(77), 55-61.

Suhendra, L. dan Arnata, I.W., 2009, Potensi Aktivitas Antioksidan Biji Adas (*Foeniculum vulgare* Mill) sebagai Penangkap Radikal Bebas, *Agrotekno*, 15, 66-71.

Wanasundra, P.K.J.P.D., Wanasundra, U.N. and Shahidi F., 1999, Changes in Flax (*Linum usitatissimum* L.) Seed Lipids During Germination, *J. Am. Oil. Chem. Soc.*, 1(76), 41-48.

Younis, M.E., M.N.A., Hasaneen, and Alla, M.M.N., 1987, Plant Growth, Metabolism and Adaptation in Relation to Stress Conditions IV. Effects of Salinity on Certain Factors Associated with the Germination of Three Different Seeds High in Fats, *Annals Botany*.

Zevevucka, M., Rejzek, M., Hoscovec, M., Svatos, A., Wimmer, Z., Koutek, B. and Legoy, M., 1997, Initial Water Content and Lipase-mediated Ester Formation in Hexane, *Biotechol. Let.*, 8(19), 745-750.