

Kesimpulan

Kulit pisang dapat diolah menjadi *nanofiber* dengan tahapan proses *pretreatment*, asetilasi dan *electrospinning*. Kulit pisang mempunyai kandungan selulosa yang cukup tinggi yaitu sebesar 65% akan tetapi pemanfaatan di Indonesia masih belum optimal dan selulosa kulit pisang bisa menjadi peluang untuk menggantikan polimer sintesis. Kulit pisang sebagai bahan baku nanofiber ini mempunyai kegunaan sebagai matrix dalam sistem penghantaran obat karena nanofiber yang dihasilkan mempunyai sifat mekanik yang kuat dan meningkatkan kelarutan obat di tubuh sehingga lebih efisien dalam sistem penghantar obat. Menurut *literature*, *nanofiber* yang dihasilkan memiliki ukuran ± 600 nm.

Daftar Pustaka

- [1] H. Tibolla, F. M. Pelissari, J. T. Martins, A. A. Vicente, and F. C. Menegalli, “Cellulose nanofibers produced from banana peel by chemical and mechanical treatments: Characterization and cytotoxicity assessment,” *Food Hydrocoll.*, vol. 75, pp. 192–201, 2018, doi: 10.1016/j.foodhyd.2017.08.027.
- [2] W. Chen, H. Yu, Y. Liu, Y. Hai, M. Zhang, and P. Chen, “Isolation and characterization of cellulose nanofibers from four plant cellulose fibers using a chemical-ultrasonic process,” *Cellulose*, vol. 18, no. 2, pp. 433–442, 2011, doi: 10.1007/s10570-011-9497-z.
- [3] H. Tibolla, F. M. Pelissari, and F. C. Menegalli, “Cellulose nanofibers produced from banana peel by chemical and enzymatic treatment,” *LWT - Food Sci. Technol.*, vol. 59, no. 2P2, pp. 1311–1318, 2014, doi: 10.1016/j.lwt.2014.04.011.
- [4] W. Chen, H. Yu, Y. Liu, P. Chen, M. Zhang, and Y. Hai, “Individualization of cellulose nanofibers from wood using high-intensity ultrasonication combined with chemical pretreatments,” *Carbohydr. Polym.*, vol. 83, no. 4, pp. 1804–1811, 2011, doi: 10.1016/j.carbpol.2010.10.040.
- [5] A. Bhatnagar and M. Sain, “Processing of cellulose nanofiber-reinforced composites,” *J. Reinf. Plast. Compos.*, vol. 24, no. 12, pp. 1259–1268, 2005, doi: 10.1177/0731684405049864.
- [6] K. Khoshnevisan *et al.*, “Cellulose acetate electrospun nanofibers for drug delivery systems: Applications and recent advances,” *Carbohydr. Polym.*, vol. 198, pp. 131–141, 2018, doi: 10.1016/j.carbpol.2018.06.072.
- [7] S. Majumder, A. Sharif, and M. E. Hoque, *Electrospun Cellulose Acetate Nanofiber: Characterization and Applications*. Elsevier Inc., 2020.
- [8] N. Alim Bahmid, K. Syamsu, and A. Maddu, “Production of Cellulose Acetate from Oil Palm Empty Fruit Bunches Cellulose,” *Chem. Process Eng. Res.*, vol. 17, no. January, 2013, [Online]. Available: www.iiste.org.
- [9] N. Alim Bahmid, K. Syamsu, and A. Maddu, “Pengaruh Ukuran Serat Selulosa Asetat Dan Penambahan Dietilen Glikol (Deg) Terhadap Sifat Fisik Dan Mekanik Bioplastik

Influence of Cellulose Acetate Fibers Size and Diethylen Glikol (Deg) Addition on Physical and Mechanical Properties of Bioplastics,” *J. Tek. Ind. Pertan.*, vol. 24, no. 3, pp. 226–234, 2014.

- [10] R. Konwarh, N. Karak, and M. Misra, “Electrospun cellulose acetate nanofibers: The present status and gamut of biotechnological applications,” *Biotechnol. Adv.*, vol. 31, no. 4, pp. 421–437, 2013, doi: 10.1016/j.biotechadv.2013.01.002.
- [11] D. S. de Almeida *et al.*, “Development and characterization of electrospun cellulose acetate nanofibers modified by cationic surfactant,” *Polym. Test.*, vol. 81, no. November 2019, p. 106206, 2020, doi: 10.1016/j.polymertesting.2019.106206.
- [12] A. A. Hamad, M. S. Hassouna, T. I. Shalaby, M. F. Elkady, M. A. Abd Elkawi, and H. A. Hamad, “Electrospun cellulose acetate nanofiber incorporated with hydroxyapatite for removal of heavy metals,” *Int. J. Biol. Macromol.*, vol. 151, pp. 1299–1313, 2020, doi: 10.1016/j.ijbiomac.2019.10.176.
- [13] S. Yadav, M. P. Illa, T. Rastogi, and C. S. Sharma, “High absorbency cellulose acetate electrospun nanofibers for feminine hygiene application,” *Appl. Mater. Today*, vol. 4, pp. 62–70, 2016, doi: 10.1016/j.apmt.2016.07.002.
- [14] S. Kalia, B. S. Kaith, and S. Vashistha, “Cellulose Nanofibers Reinforced Bioplastics and Their Applications,” *Handb. Bioplastics Biocomposites Eng. Appl.*, pp. 452–470, 2011, doi: 10.1002/9781118203699.ch16.
- [15] Y. A. Gismatulina, V. V. Budaeva, S. G. Veprev, G. V. Sakovich, and V. K. Shumny, “Cellulose from various parts of Soranovskii Miscanthus,” *Russ. J. Genet. Appl. Res.*, vol. 5, no. 1, pp. 60–68, 2015, doi: 10.1134/S2079059715010049.
- [16] H. Tibolla, F. M. Pelissari, M. I. Rodrigues, and F. C. Menegalli, “Cellulose nanofibers produced from banana peel by enzymatic treatment: Study of process conditions,” *Ind. Crops Prod.*, vol. 95, pp. 664–674, 2017, doi: 10.1016/j.indcrop.2016.11.035.
- [17] W. R. Wan Daud and F. M. Djuned, “Cellulose acetate from oil palm empty fruit bunch via a one step heterogeneous acetylation,” *Carbohydr. Polym.*, vol. 132, pp. 252–260, 2015, doi: 10.1016/j.carbpol.2015.06.011.

- [18] M. A. Wsoo, S. Shahir, S. P. Mohd Bohari, N. H. M. Nayan, and S. I. A. Razak, “A review on the properties of electrospun cellulose acetate and its application in drug delivery systems: A new perspective,” *Carbohydr. Res.*, vol. 491, no. March, p. 107978, 2020, doi: 10.1016/j.carres.2020.107978.
- [19] S. Inukai, N. Kurokawa, and A. Hotta, “Annealing and saponification of electrospun cellulose-acetate nanofibers used as reinforcement materials for composites,” *Compos. Part A Appl. Sci. Manuf.*, vol. 113, pp. 158–165, 2018, doi: 10.1016/j.compositesa.2018.07.028.
- [20] C. I. K. Diop, H. L. Li, B. J. Xie, and J. Shi, “Effects of acetic acid/acetic anhydride ratios on the properties of corn starch acetates,” *Food Chem.*, vol. 126, no. 4, pp. 1662–1669, 2011, doi: 10.1016/j.foodchem.2010.12.050.
- [21] B. 2009. P. P. S. S. B. N. D. S. (Agave sisalana) dan B. B. (Dendrocalamus asper). Subyakto, Hermiati, E., Yanto D., Fitria., Budiman, I., Ismadi., Nanang Masruchin., Subiyanto, “133-658-1-PB.pdf.” pp. 57–65, 2009.
- [22] T. Rahman *et al.*, “Review: Sintesis Karbon Nanopartikel,” *J. Integr. Proses*, vol. 5, no. 3, pp. 120–131, 2015.
- [23] S. Tungprapa, I. Jangchud, and P. Supaphol, “Release characteristics of four model drugs from drug-loaded electrospun cellulose acetate fiber mats,” *Polymer (Guildf.)*, vol. 48, no. 17, pp. 5030–5041, 2007, doi: 10.1016/j.polymer.2007.06.061.
- [24] O. Suwantong, P. Opanasopit, U. Ruktanonchai, and P. Supaphol, “Electrospun cellulose acetate fiber mats containing curcumin and release characteristic of the herbal substance,” *Polymer (Guildf.)*, vol. 48, no. 26, pp. 7546–7557, 2007, doi: 10.1016/j.polymer.2007.11.019.