

PEMBUATAN PULP DARI BATANG SEMU PISANG UTER (*Musa paradisiaca* Linn. var *uter*) PASCAPANEN DENGAN PROSES SODA

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INTISARI

Upaya-upaya penggunaan serat bukan kayu sebagai alternatif sumber serat telah dilakukan untuk memenuhi kebutuhan bahan baku pembuatan pulp dan kertas yang makin meningkat. Salah satu sumber penghasil serat bukan kayu diantaranya adalah batang semu pisang uter (*Musa paradisiaca* Linn. var *uter*). Disamping sebagai upaya meringankan kesulitan bahan baku pembuatan pulp dan kertas, pemanfaatan batang semu pisang uter pascapanen juga akan meningkatkan nilai ekonomisnya. Penelitian ini bertujuan untuk mengetahui kemungkinan penggunaan batang semu pisang uter pascapanen sebagai bahan baku pulp dengan proses soda serta mengetahui pengaruh waktu pemasakan dan konsentrasi soda terhadap rendemen, bilangan kappa, dan sifat fisik pulpnya.

Bahan penelitian ini adalah batang semu pisang uter pascapanen yang diperoleh dari areal persawahan di Kecamatan Ngaglik, Sleman, D.I. Yogyakarta. Batang semu pisang uter dimasak menjadi pulp dalam bentuk serpih berukuran 3 cm x 3 cm x 0,2 cm. Waktu pemasakan selama 2,5 jam dan 3,5 jam. Sedangkan konsentrasi larutan soda sebesar 4 %, 8 %, dan 12 %. Suhu pemasakan maksimal 150 °C. Penelitian ini menggunakan percobaan faktorial dengan Rancangan Acak Lengkap (*Completely Randomized Design*). Analisis statistik yang digunakan adalah Analisis Keragaman (*Analysis of Varians*) dengan faktor waktu pemasakan dan konsentrasi larutan soda. Uji lanjut menggunakan uji Tukey/HSD (*Honestly Significant Difference*). Adapun pengujian sifat fisik pulp yang dihasilkan menggunakan standar SNI 14-0437-1989 untuk uji ketahanan tarik, SNI 14-0436-1989 untuk uji ketahanan sobek, dan SNI 14-0491-1989 untuk uji ketahanan lipat.

Hasil penelitian menunjukkan bahwa batang semu pisang uter pascapanen dapat digunakan sebagai bahan baku pembuatan pulp dengan rata-rata nilai rendemen sebesar 19,86 % ; bilangan kappa 21,93 % ; indeks tarik 39,72 Nm/g ; indeks sobek 24,46 mN.m²/g; dan kekuatan lipat 5690 kali. Pemasakan pada tingkat konsentrasi larutan soda dan waktu yang berbeda hanya berpengaruh nyata terhadap rendemen pulp tetapi tidak berpengaruh nyata terhadap bilangan kappa dan sifat fisik pulpnya. Sedangkan interaksi antara konsentrasi larutan soda dengan waktu pemasakan tidak memberikan pengaruh nyata terhadap rendemen, bilangan kappa, dan sifat fisik pulpnya. Nilai rata-rata indeks sobek dan kekuatan lipat yang relatif besar, yaitu masing-masing 24,46 mN.m²/g dan 5690 kali, menjadi keunggulan bagi pulp batang semu pisang uter dibanding pulp dari pisang jenis lain.

Kata kunci : serat kayu, serat bukan kayu, batang semu, *Musa paradisiaca* Linn. var *uter*, waktu pemasakan, konsentrasi soda, rendemen, bilangan kappa, sifat fisik pulp.

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THE MAKING OF PULP FROM PSEUDO-STEM OF POST CROP UTER BANANA (*Musa paradisiaca* Linn. var uter) BY SODA PROCESS

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ABSTRACT

The efforts of using non-wood fibers as alternative of fiber source had been done to supply raw material needs for pulp and paper making which of increase. One of non-wood fiber sources was pseudo-stem of post crop uter banana (*Musa paradisiaca* Linn. var uter). Besides to solve difficulty of raw material for pulp and paper making, using of pseudo-stem of post crop uter banana will increase their economic values too. The objectives of this experiment are to study the possibility of using pseudo-stem of post crop uter banana as raw material for pulp and the effect of cooking time and soda concentration on the yield, the kappa number, and the physical properties of the pulp.

The experiment was undertaken by using pseudo-stem of post crop uter banana which of taken from cultivation on rice field in Ngaglik Sub District, Sleman District, D.I. Yogyakarta. Pseudo-stem of post crop uter banana was cooked in chips shape which measured by 3 cm x 3 cm x 0,2 cm. The cooking time used were 2,5 and 3,5 hours ; soda concentration were 4 %, 8 %, and 12 % ; and maximum temperature was 150 °C. This experiment was designed in a completely randomized design with two factors, such as cooking time and soda concentration, and used analysis of varians as statistical analysis. Post Hoc tests used Tukey Test/HSD (Honestly Significant Difference). The tests of the physical properties of the pulp used SNI 14-0437-1989 for tensile strength, SNI 14-0436-1989 for tear strength, and SNI 14-0491-1989 for folding endurance.

The results of experiment showed that pseudo-stem of post crop uter banana could be used as a raw material for pulp with screened yield mean was 19,86 % ; kappa number was 21,93 % ; tensile index was 39,72 Nm/g ; tear index was 24,46 mN.m²/g; and folding endurance was 5690 times. The cooking on three levels of soda concentrations and two levels of cooking time only significantly affected the pulp yield but didn't significantly affect kappa number and the physical properties of the pulp. The interaction between soda concentration and cooking time was not significantly affected the pulp yield, the kappa number, and the physical properties of the pulp. The mean of tear index and folding endurance which is relatively high, such as 24,46 mN.m²/g and 5690 times, become superiority for pulp of pseudo-stem of post crop uter banana than pulp from another species of banana.

Keywords : wood fiber, non-wood fiber, batang semu, *Musa paradisiaca* Linn. var uter, cooking time, soda concentration, yield, kappa number, physical properties of the pulp

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