

## PERBANDINGAN SIFAT FISIKO-KIMIA HASIL PIROLISIS DAN REDISTILASI ASAP CAIR LIMBAH KAYU PUSPA

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### INTISARI

Puspa (*Schima wallichii*) merupakan tanaman berkayu yang tumbuh baik di Indonesia. Kayu puspa dimanfaatkan sebagai kayu pertukangan untuk bahan pembuatan rumah. Di Kecamatan Secang, Kabupaten Magelang, Jawa Tengah, banyak terdapat *home* industri pengolahan kayu puspa yang menghasilkan limbah serbuk gergajian yang tidak dimanfaatkan lebih lanjut oleh masyarakat. Sementara selama ini limbah kayu puspa telah diteliti menjadi arang aktif namun belum dilakukan pemanfaatan terhadap asap cair yang dihasilkan. Penelitian ini bermaksud membuat asap cair limbah kayu puspa melalui proses pirolisis dan redistilasi (pemurnian ulang) untuk menciptakan asap cair yang relatif aman untuk kesehatan apabila diaplikasikan pada pangan. Penelitian asap cair limbah kayu puspa menggunakan bahan baku serbuk gergaji kayu puspa yang diuji kadar airnya terlebih dahulu, proses pembuatan asap cair melalui proses pirolisis dengan suhu 350°C dan redistilasi dengan suhu didih 100°C. Selanjutnya, asap cair limbah kayu puspa dihitung rendemennya dan diuji sifat fisiko-kimianya yang meliputi berat jenis, pH, kadar fenol, kadar asam, dan analisis kimia penyusun asap cair menggunakan GC-MS (*Gas Chromatography-Mass Spectrometry*). Hasil penelitian ini memberikan nilai kadar air bahan baku 8,77%, asap cair hasil proses pirolisis memiliki nilai rendemen 10,21%, berat jenis 1,145%, pH 2,17%, kadar fenol 1,51%, dan kadar asam 5,34%. Sedangkan, asap cair hasil redistilasi memiliki nilai rendemen 72%, berat jenis 0,90%, pH 1,69%, kadar fenol 0,55%, dan kadar asam 2,30%. Komposisi kimia asap cair limbah kayu puspa hasil pirolisis maupun redistilasi meliputi phenol, m-cresol, guaiakol, furan-2-carbonyl chloride tetrahydro-, 4-ethylguaiacol, 4-ethylphenol, phenyl carbamate, o-xilenol, dan lainnya. Hasil GC-MS asap cair redistilasi tidak ditemukan lagi senyawa benzene dan turunannya sehingga aman untuk diaplikasikan pada produk pangan.

Kata kunci: Asap Cair, Fisiko-Kimia, Limbah Kayu Puspa, Pirolisis, Redistilasi

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## COMPARISON OF PHYSICO-CHEMICAL PROPERTIES OF PYROLISIS AND REDISTILATION OF PUSPA WOOD LIQUID WASTE

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### ABSTRACT

Puspa (*Schima wallichii*) is a woody plant that grows well in Indonesia. Puspa wood is used as carpentry wood for home building materials. In Secang, Magelang Regency, Central Java, there are many puspa wood processing industries that produce sawdust waste which is not further used by the community. While all this time, puspa wood waste has been investigated as active charcoal, but no use of liquid smoke has been made. This research intends to make liquid smoke of puspa wood waste through the process of pyrolysis and redistillation (refining) to create liquid smoke that is relatively safe for health when applied to food. Puspa wood waste liquid smoke research used the raw material of puspa wood sawdust which was tested for its moisture content first, the process of making liquid smoke through a pyrolysis process with a temperature of 350°C and redistillation with a boiling temperature of 100°C. Furthermore, the liquid smoke of puspa wood waste is calculated its yield and its physico-chemical properties are tested which include specific gravity, pH, phenol content, acid content, and chemical analysis of liquid smoke compilers using GC-MS (*Gas Chromatography-Mass Spectrometry*). The results of this study provide the raw material moisture content of 8.77%, liquid smoke from the pyrolysis process has a yield value of 10.21%, specific gravity 1.145%, pH 2.17%, phenol levels of 1.51%, and acid levels of 5.34%. Meanwhile, liquid smoke resulting from redistillation has a yield value of 72%, specific gravity 0.90%, pH 1.69%, phenol levels 0.55%, and 2.30% acid levels. Chemical composition of liquid smoke of puspa wood waste includes phenol, m-cresol, guaiacol, furan-2-carbonyl chloride tetrahydro-, 4-ethylguaiacol, 4-ethylphenol, phenyl carbamate, o-xyleneol, and others. The results of GC-MS redistilling liquid smoke no longer found benzene compounds and their derivatives making it safe to apply to food products.

Keywords: Liquid Smoke, Physico-Chemical, Puspa Wood Waste, Pyrolysis, Redistillation

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