

STUDI PERBANDINGAN TEKNIK DESTILASI AIR-UAP (*WATER-STEAM DISTILLATION*) DENGAN DESTILASI *WATER BUBBLE* TERHADAP KUALITAS MINYAK ATSIRI NILAM TERFERMENTASI

INTISARI

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Telah dilakukan penelitian tentang perbandingan kualitas minyak nilam yang terfermentasi dengan menggunakan teknik Destilasi Air-Uap dan *Water Bubble*. Bahan baku nilam yang digunakan pada penelitian ini berasal dari Samigaluh, Kulonprogo, Yogyakarta. Penelitian ini bertujuan untuk mengetahui teknik destilasi yang tepat untuk meningkatkan kadar patchoulol alkohol (patchoulol), rendemen dan kualitas minyak. Perlakuan pendahuluan seperti pelayuan dan pengeringan, pengecilan ukuran serta fermentasi diupayakan untuk meningkatkan rendemen. Proses fermentasi dilakukan selama 10 jam dalam wadah tertutup. Satu Kg nilam dilembabkan dengan 500 mL akuades. Perusakan dinding sel daun nilam oleh enzim selulase pada saat fermentasi berasal dari jamur *Aspergillus sp* dan *Penicillium sp* yang merupakan jamur penghasil selulase.

Nilam yang terfermentasi didestilasi selama 6 jam dengan Destilasi Air-Uap dan Destilasi *Water Bubble*. Rendemen minyak yang didapatkan Destilasi Air-Uap lebih besar dibandingkan dengan Destilasi *Water Bubble* yaitu 8,55 % berbanding 3,45 %. Uji sifat fisika dan kimia dilakukan pada sampel minyak dengan menggunakan standar SNI-06-2385-2006 tentang minyak nilam. Berat jenis, indeks bias dan bilangan asam minyak nilam hasil Destilasi Air-Uap belum memenuhi standar baku yaitu 0,991; 1,623 dan 13,19. Sedangkan hasil Destilasi *Water Bubble* sudah memenuhi standar baku yaitu 0,955; 1,510 dan 6,61. Kemudian kadar patchoulol ditentukan menggunakan KG-SM. Kadar patchoulol terbesar pada hasil Destilasi *Water Bubble* yaitu 61,53 % sedangkan hasil destilasi uap-air hanya 38,24 %. Teknik Destilasi *Water Bubble* mampu meningkatkan kadar patchoulol dan mutu minyak nilam akan tetapi kurang tepat digunakan untuk meningkatkan rendemen minyak.

Kata Kunci: nilam terfermentasi, Destilasi Uap-Air, Destilasi *Water Bubble*, patchoulol, KG-SM

COMPARATIVE STUDY OF WATER-STEAM DISTILLATION WITH WATER BUBBLE DISTILLATION TECHNIQUES AGAINST QUALITY OF ESSENTIAL OIL FROM FERMENTED PATCHOULI

ABSTRACT

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A comparative study of the quality of fermented patchouli oil using Water-Steam Distillation and Water Bubble Distillation techniques has been researched. The raw materials were Patchouli plants from Samigaluh, Kulon Progo, Yogyakarta. The purpose of this study was to find out the exactly distillation techniques to use in increasing the percentage of patchouli alcohol (patchoulol), yield and quality of patchouli oil. Pretreatment such as withering and drying, size reduction and fermentation were intended to increase the yield. The fermentation process carried out for 10 hours in a sealed plastic container. One Kg of patchouli were moisturized with 500 mL of aquadest. Destruction of cell walls of patchouli leaves used cellulase enzymes during fermentation derived from the fungus *Aspergillus* sp and *Penicillium* sp which is a cellulase-producing fungus.

Fermented patchouli was distilled for 6 hours with Water-Steam and Water Bubble Distillation. The yield oil obtained in Water-Steam Distillation is higher than the Water Bubble Distillation i.e. 8.55 % versus 3.45 %. Physical and chemical propertie test on the sample of patchouli oil using SNI standard (SNI-06-2385-2006). Density, refractive index and acid number of patchouli oil in Water-Steam Distillation results did not find the standards, i.e. 0.991; 1.623 and 13.19. While the Water Bubble Distillation already found the standards, i.e. 0.955; 1.510 and 6.61. Patchoulol percentage were determined using GC-MS. The content of patchoulol in Water Bubble distilation i.e. 61.53 % while the Water-Steam Distillation only 38.24 %. The Technique of Water Bubble Distillation can be used to increase patchoulol and patchouli oil quality, but not for the yield oil.

Keywords: fermented patchouli, Water-Steam Distillation, Water Bubble Distillation, patchoulol, GC-MS