

**PENGARUH PRAPERLAKUAN PANAS DAN METODE EKSTRAKSI
TERHADAP KUALITAS MINYAK MALAPARI (*Pongamia pinnata*)
UNTUK PEMBUATAN BIODIESEL**

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INTISARI

Malapari (*Pongamia pinnata*) termasuk sebagai tanaman serbaguna. Bagian tanaman mulai dari akar hingga daunnya dapat dimanfaatkan untuk bahan bakar, pakan ternak, hingga pengobatan tradisional. Selain itu, potensi pemanfaatan malapari yang paling berpotensi adalah minyaknya sebagai alternatif minyak nabati untuk pembuatan biodiesel. Namun, produksi minyak malapari terkendala pada efisiensi proses. Penelitian ini dilakukan untuk mendapatkan perlakuan yang optimal dari variasi praperlakuan panas untuk mengekstrak minyak berkualitas dari biji malapari dengan perbandingan dua metode ekstraksi yang berbeda.

Penelitian dilakukan secara acak lengkap dengan variasi praperlakuan biji terdiri atas kontrol tanpa perlakuan, praperlakuan oven suhu 60°C, dan praperlakuan oven suhu 90°C. Ketiga perlakuan dilakukan sebelum ekstraksi minyak baik menggunakan metode *screw press expeller* maupun metode pelarut n-heksana. Minyak diuji sesuai SNI 7431:2015 meliputi nilai kadar air, massa jenis, angka asam, angka iod, dan viskositas kinematik suhu 50°C. Nilai-nilai tersebut dianalisis pengaruhnya terhadap variasi praperlakuan menggunakan analisis varian *one-way* dan dilanjut uji HSD (*Honestly Significant Difference*).

Penelitian menunjukkan bahwa variasi praperlakuan yang digunakan tidak berpengaruh terhadap kualitas minyak malapari, kecuali rendemen dari hasil ekstraksi *screw press*. Rekomendasi diambil dari perlakuan biji malapari meliputi tanpa perlakuan menggunakan metode ekstraksi *screw press* menghasilkan rendemen 16,50%; kadar air 0,02%; massa jenis 970 kg/m³; angka asam 3,43 mg KOH/g; angka iod 76,93 g-I₂/100 g; dan viskositas kinematik suhu 50°C sebesar 43 mm²/s.

Kata Kunci: Biji Malapari, Screw Press, n-Heksana, Angka Asam, Rendemen

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***EFFECT OF HEAT-PRETREATMENT AND EXTRACTION METHOD
ON THE QUALITY OF MALAPARI OIL (*Pongamia pinnata*)
FOR BIODIESEL PRODUCTION***

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ABSTRACT

*Malapari (*Pongamia pinnata*) is classified as a multipurpose plant. Nearly all parts of the plant, from the roots to the leaves, can be utilized for various purposes, including fuel, animal feed, and traditional medicine. Among its various uses, the most promising potential lies in its oil, which serves as an alternative vegetable oil for biodiesel production. However, the production of Malapari oil faces challenges related to process efficiency. This study aimed to gain the optimal thermal pretreatment to extract high-quality oil from Malapari seeds, comparing two different extraction methods.*

The experiment was conducted using Completely Randomized Design (CRD) with three seed treatment variation: an untreated control, oven heating at 60 °C, and oven heating at 90 °C. Each treatment was applied to oil extraction using screw press expeller and n-hexane solvent method. The extracted oil was analyzed based on SNI 7431:2015 including moisture content, density, acid value, iodine value, and kinematic viscosity at 50 °C. The result data was analyzed using One-Way ANOVA followed by Honestly Significant Difference (HSD) test.

*The result indicated that heat pretreatment variations had no significant effect on Malapari oil quality, except for the yield obtained from the screw press method. Recommendation was taken from the treatment of Malapari (*Pongamia pinnata*) seeds without any pre-treatment using the screw press extraction method. This process yielded an oil recovery of 16,50%; moisture content of 0,02%; density of 970 kg/m³; acid value of 3,43 mg KOH/g; iodine value of 76,93 g I₂/100 g; and kinematic viscosity at 50 °C of 43 mm²/s.*

Keywords: Malapari Seed, Screw Press, n-Hexane, Acid Value, Oil Yield

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