

**ANALISIS SIDIK JARI BUNGA CENGKEH (*Syzygium aromaticum* (L.)) DI
DAERAH JAWA BARAT MENGGUNAKAN METODE FTIR KOMBINASI
DENGAN KEMOMETRIK PCA**

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ABSTRAK

Cengkeh merupakan tanaman asli Indonesia yang tersebar ke seluruh provinsi, salah satunya provinsi Jawa Barat. Cengkeh terbukti secara empiris dapat digunakan sebagai tanaman herbal berdasarkan kandungannya. Namun, kandungan cengkeh dapat berbeda tergantung dari tempat asal cengkeh itu tumbuh. Perlu dilakukan analisis untuk mengetahui profil sidik jari cengkeh berdasarkan spektrum FTIR dikombinasi dengan kemometrik PCA dari lima daerah yang mewakili Jawa Barat, yaitu Bandung, Bogor, Purwakarta, Cianjur dan Tasikmalaya. Cengkeh diekstraksi menggunakan metode maserasi dengan pelarut etanol 96% (1:10) selama 3×24 jam, kemudian ekstrak tersebut dianalisis menggunakan FTIR pada panjang gelombang 4000-650 cm^{-1} dengan resolusi 4 cm^{-1} . Hasil berupa transmittan diolah menggunakan *The Unscrambler X* dengan pra-perlakuan *smoothing*, *derivative*, dan *SNV* memberikan hasil akumulasi nilai PC 89% dan menghasilkan 3 kelompok berdasarkan persamaan karakteristik pada score plot yaitu kelompok 1 (Bogor), kelompok 2 (Bandung, Cianjur, dan Tasikmalaya), kelompok 3 (Purwakarta).

Kata kunci: bunga cengkeh, FTIR, kemometri, PCA

FINGERPRINT ANALYSIS OF CLOVE FLOWERS (*Syzygium aromaticum* (L.)) IN THE WEST JAVA REGION USING FTIR METHOD COMBINED WITH PCA CHEMOMETRICS

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ABSTRACT

Cloves is a native Indonesian plant that is spread throughout the provinces, one of which is West Java province. Cloves are empirically proven to be used as herbal plants based on their content. However, the content of cloves can vary depending where the cloves grow from. It necessary to analyze the clove fingerprint profile based on FTIR spectrum combined with PCA chemometrics from five regions representing West Java, namely Bandung, Bogor, Purwakarta, Cianjur, and Tasikmalaya. Cloves were extracted using maceration method with 96% ethanol solvent (1:10) for 3×24 hours, then the extract was analyzed using FTIR at wavelength of 4000-650 cm⁻¹ with a resolution of 4 cm⁻¹. The result in the form of transmittance were processed using The Unscrambler X with pre-processing of smoothing, derivative, and SNV giving a PC-1 value 89% and producing 3 groups based on similar characteristics in the score plot, namely group 1 (Bogor), group 2 (Bandung, Cianjur, and Tasikmalaya), group 3 (Purwakarta).

Key word: clove flower, FTIR, chemometrics, PCA