

**ISOLASI MINYAK ATSIRI DAUN SICEREK (*Clausena excavata*  
Burm.f.) DAN UJI TOKSISITASNYA DENGAN METODE *BRINE*  
*SHRIMP LETHALITY TEST* (BSLT)**

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## INTISARI

### ISOLASI MINYAK ATSIRI DAUN SICEREK (*Clausena excavata* Burm.f.) DAN UJI TOKSISITASNYA DENGAN METODE *BRINE SHRIMP LETHALITY TEST* (BSLT)

oleh:

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Sicerek (*Clausena excavata* Burm.f) merupakan tumbuhan semak liar yang termasuk dalam famili Rutaceae. Aroma khas yang dihasilkan dari daun sicerek menunjukkan adanya kandungan minyak atsiri. Berdasarkan uji fitokimia telah dilaporkan bahwa daun sicerek mengandung berbagai senyawa metabolit sekunder seperti polifenol, alkaloid, flavonoid, triterpenoid, saponin, dan kumarin. Penelitian ini bertujuan untuk menentukan komponen kimia minyak atsiri hasil isolasi dari daun sicerek (*Clausena excavata* Burm.f.) menggunakan *Gas Chromatography-Mass Spectrometry* (GC-MS) dan untuk mengetahui kemampuan aktivitas toksisitas dari minyak atsiri hasil isolasi. Minyak atsiri dari daun sicerek diperoleh melalui proses hidrodestilasi, menghasilkan 6,2 mL minyak atsiri dengan rendemen 0,10683% (b/b) dan massa jenis 0,8616 g/mL. Karakterisasi senyawa kimia dari minyak atsiri dilakukan menggunakan *Gas Chromatography-Mass Spectrometry* (GC-MS). Hasil analisis menunjukkan adanya 32 senyawa, senyawa-senyawa tersebut terbagi dalam beberapa golongan yaitu sesquiterpen hidrokarbon (79,46%), sesquiterpen teroksigenasi (18,31%), monoterpen teroksigenasi (0,82%), dan monoterpen hidrokarbon (0,67%). Adapun lima senyawa utama dengan kadar diatas 5% yaitu  $\beta$ -Cubebene (18,81%), Caryophyllene (15,57%), Bicyclogermacrene (14,42%), Bicyclo[5.2.0]nonane, 4-methylene-2,8,8-trimethyl-2-vinyl (9,66%), dan 3 Isopropenyl-1-isopropyl-4-methyl-4-vinyl-1-cyclohexene (8,65%). Uji aktivitas toksisitas minyak atsiri dilakukan menggunakan metode *Brine Shrimp Lethality Test* (BSLT). Hasilnya menunjukkan bahwa minyak atsiri daun sicerek memiliki efek toksik kuat terhadap larva udang *Artemia salina* Leach, dengan nilai  $LC_{50}$  sebesar 58,385  $\mu$ g/mL. Terdapat lima senyawa didalam daun sicerek yang berpotensi menyebabkan toksisitas kuat diantaranya yaitu caryophyllene, bicyclogermacrene, spathulenol,  $\gamma$ -Elemene, dan camphor.

**Kata kunci:** *Clausena excavata* Burm.f., minyak atsiri, toksisitas



## ABSTRACT

### ISOLATION OF ATTRACTIVE OIL OF SICEREK LEAVES (*Clausena excavata* Burm.f.) AND TOXICITY TEST BY BRINE SHRIMP LETHALITY TEST (BSLT) METHODS

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Sicerek (*Clausena excavata* Burm.f) is a wild shrub that belongs to the Rutaceae family. The distinctive aroma produced from sicerek leaves indicates the presence of essential oil content. Based on phytochemical tests, it has been reported that sicerek leaves contain various secondary metabolite compounds such as polyphenols, alkaloids, flavonoids, triterpenoids, saponins, and coumarins. This study aims to determine the chemical components of essential oil isolated from sicerek leaves (*Clausena excavata* Burm.f.) using Gas Chromatography-Mass Spectrometry (GC-MS) and to determine the ability of toxicity activity of the isolated essential oil. Essential oil from sicerek leaves was obtained through a hydrodistillation process, producing 6,2 mL of essential oil with a yield of 0,10683% (b/b) and a density of 0,8616 g/mL. Characterization of chemical compounds from essential oil was carried out using Gas Chromatography-Mass Spectrometry (GC-MS). The analysis showed the presence of 32 compounds, these compounds are divided into several groups, namely sesquiterpene hydrocarbons (79,46%), oxygenated sesquiterpenes (18,31%), oxygenated monoterpenes (0,82%), and monoterpene hydrocarbons (0,67%). The five main compounds with levels above 5% are  $\beta$ -Cubebene (18.81%), Caryophyllene (15.57%), Bicyclogermacrene (14.42%), Bicyclo[5.2.0]nonane, 4-methylene-2,8,8-trimethyl-2-vinyl (9.66%), and 3 Isopropenyl-1-isopropyl-4-methyl-4-vinyl-1-cyclohexene (8.65%). Essential oil toxicity activity test was conducted using Brine Shrimp Lethality Test (BSLT) method. The results show that sicerek leaf essential oil has a strong toxic effect on *Artemia salina* Leach shrimp larvae, with an LC50 value of 58.385  $\mu$ g/mL. There are five compounds in sicerek leaves that have the potential to cause strong toxicity including caryophyllene, bicyclogermacrene, spathulenol,  $\gamma$ -Elemene, and camphor.

**Keywords:** *Clausena excavata* Burm. f., essential oil, toxicity

