

## Extraction of Essential Oil from *Murraya Koenigii* Leaves'

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### Abstract

*Murraya Koenigii* leaves contain many useful chemical constituents. The leaves which known as *Daun Kari* in Malaysia is belong to family Rutaceae and was abundantly planted in Malaysia, India, Bangladesh, Nepal, Sri Lanka and Burma. The study is to characterize the components of essential oil of the leaves and finding its potential to be applied as natural insect repellent. The essential oil was extracted using steam distillation and hydro-distillation. The time of extraction for both methods was between 3 to 9 hours. For every hour of extraction time, the yield between these two methods was compared. The results shows that the percentage yield for steam distillation in method is higher compared to conventional method which is hydro-distillation method. The highest yield obtained from 9 hours steam distillation is 0.25% (w/w) whereby 9 hours hydro-distillation method could only collected 0.09% (w/w) of yield. Components identification of the essential oil performed by GC-MS detected the presence of different components, majorly hydrocarbons. The analysis was also reported the existence of  $\alpha$ -pinene which is the active ingredient for insect repellent. Based on this study, the present of these two repellent activity compounds in the extracted essential oil proves its potential to be used as active ingredients in natural-based insect repellent.

**Key words:** *Murraya Koenigii*; Essential oils; Hydrodistillation; Steam distillation; Insect repellent

Table 1. Chemical constituent, percentage area and retention time of *Murraya Koenigii* leaves' essential oil.

Compound	Hydro-distillation		Steam distillation	
	Area	Retention	Area	Retention
Cyclohexane	0.51	11.351	-	-
$\alpha$ - pinene	-	-	6.51	4.708
$\beta$ -Phellandere	21.21	6.114	1.70	6.116
Caryophyllene	20.06	11.752	37.98	11.672
$\alpha$ -Caryophyllene	12.59	12.153	-	-
1,3,6-Octatriene	2.33	6.382	-	-
Nepthalene	1.04	12.549	16.30	12.575
Decahydro-4a-methyl-1-methylene	2.78	12.661	-	-
Globulol	0.46	13.683	-	-
Azulene	0.30	13.998	9.69	38.636
1-4-Dimethyl-8-isopropylidene-tricyclo	-	-	5.57	40.046
Oxalic Acid	-	-	0.12	44.853
n-Hexadecanoic acid	0.95	14.763	0.657	51.384
1-Eicosene	-	-	0.23	52.993
9-Octadecenoic acid	3.52	17.988	-	-
Oleic Acid	12.44	18.737	0.74	59.691
Phytol	3.46	19.037	9.21	55.706
Palmitic Acid	-	-	2.82	60.460
$\beta$ -Piperidinopropiophenone	15.71	20.031	-	-
Triacotane	2.46	20.743	-	-
Cyclopentadecanone, 2-hydroxy	-	-	8.46	62.158

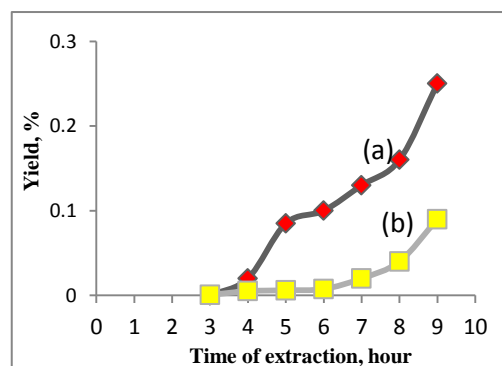


Fig. 1. Comparison of yield from (a) Steam Distillation and (b) Hydro-Distillation.