

# ASEAN MICROBIAL BIOTECHNOLOGY CONFERENCE 2016

3-4 AUGUST 2016  
Sanur Paradise Plaza,  
Bali, Indonesia



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# ANTI-ACNE BIOMARKER IDENTIFICATION OF ESSENTIAL OIL *PIPER BETLE L. FOLIUM*



I Made Agus Gelgel Wirasuta and Ni Luh PutuVidya Paramita

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## ABSTRACT

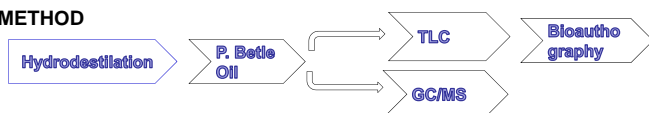
The anti-acne of *P. betle L.* oil was identified and determinate. The essential oil of fresh *P. betle* leaves with hydrodistillation was isolated. The spotted *P. betle* oil on TLC SIGF 254 plate was eluted by with the solvent of toluene: ethyl acetate; 93:7, (v/v). The densitograms of spot was scanned and anti-acne biomarker with of TLC-bioautography was identified. The active compound determinate by GC/MS.

The *P. betle* oil possessed two inhibition zones (IZ). The both peaks presented the close in-situ UV spectrum to the eugenol library spectrum. The GC/MS results, affirmed five eugenol derivate substances. The substance were chavicol and eugenol. These presumed active to *Propioni Acne* bacteria and possessed bio-acne activity.

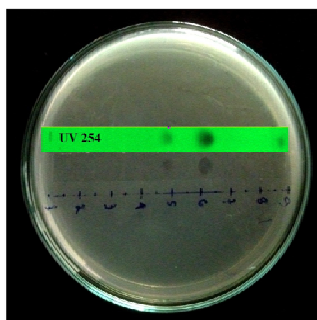
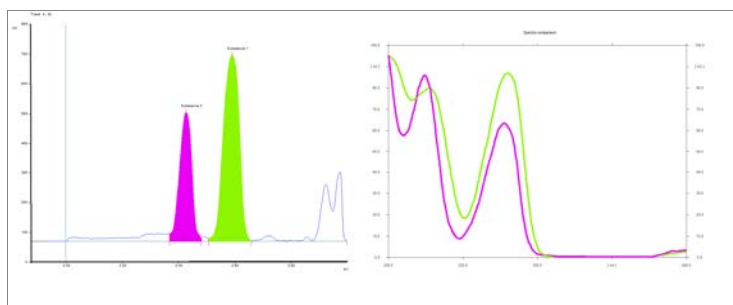
## INTRODUCTION

The chemical constituents of *P. betle L.* essential oil were monoterpenes, sesqui-terpenes, alcohols, aldehydes, oxides, phenols, phenolic ester, and ester (Balasubrahmanyam and Rawat, 1992). The TLC bioautography has been used to identify the antimicrobial bioactive compound. These TLC numerical parameter data set are necessary for the further identification biomarkers. The GC-MS results inform us the contained compounds identity of *P. betle L.* oil. Combining the TLC bioautography, TLC-densitometer, and GC-MS result will identify precisely the antifungal bio-active compound of *P. betle L.* oil. The study was aimed to determine the anti-acne biomarker of PBL oils, which collected around Bali Island and to determine their chromatographic fingerprint for the authentication and quality control.

## METHOD

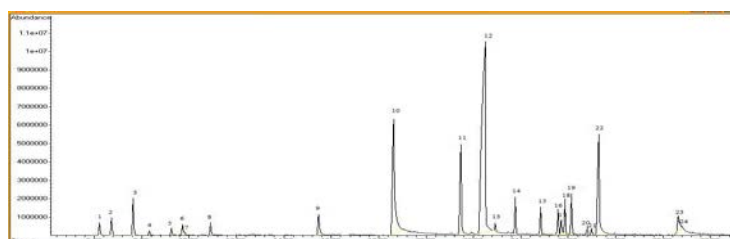


## RESULTS AND DISCUSSION



The TLC-bioautography of PBL oils presented two inhibition zones. The first IZs (s1) were found in around 45-50 mm and the second IZs (s2) were located in 60-65 mm. The second IZs possessed wider diameter than the first. These results indicated that the PBL oils from Bali Island obtained two biomarkers (s1 and s2).

GC/MS presented, that the eugenol possessed highest %AUC (54.8%) and the second was the chavibetol. It could be presumed the both substances were the bioactive of anti-acne activity of *P. betle* oil.



No.	Rt	%AUC	m/z	Identified Substance
1.	6.21	0.49	93, 91, 92	$\alpha$ Pinene
2.	6.72	1.17	93, 79, 91	Camphene
3.	7.64	1.47	93, 91, 77	$\alpha$ Phellandrene
4.	8.32	0.43	93, 41, 69	$\beta$ Pinene
5.	9.25	0.39	93, 121, 136	Bicyclo 4.1.0 heptane 3,7,7 trimethyl
6.	9.72	1.26	93, 77, 91	$\beta$ Phellandrene
7.	9.80	0.44	43, 81, 108	Eucalyptol atau Cineole
8.	10.90	0.59	121, 93, 136	Terpinene
9.	15.46	2.59	59, 93, 43	Terpineol
10.	18.63	13.87	134, 133, 107	Chavicol
11.	21.47	2.38	164, 77, 149	Isoeugenol
12.	22.50	54.86	164, 103, 77	Eugenol
13.	22.92	0.78	164, 93, 81	$\beta$ Elemene
14.	23.77	2.42	41, 93, 69	Caryophyllene
15.	24.84	1.97	93, 80, 41	Humulene ( $\alpha$ caryophyllene)
16.	25.57	2.43	105, 94, 93	$\alpha$ Amorphene
17.	25.70	2.24	161, 105, 91	Germacrene
18.	25.87	2.41	161, 105, 204	$\gamma$ Selinene
19.	26.14	3.08	189, 204, 133	$\alpha$ Selinene
20.	26.80	0.58	161, 122, 107	$\alpha$ Panasinsen
21.	26.98	0.94	161, 204, 134	$\delta$ Amorphene
22.	27.29	3.27	135, 93, 107	$\alpha$ Patchoulene
23.	30.64	0.39	150, 43, 192	Allylpyrocatechol 3,4-diacetate

## CONCLUSION

The *P. betle L.* oil presented anti-acne activity, which presumed obtain from eugenol and chavicol.

## Reference

- Balasubrahmanyam V.R. and Rawat A.K.S. (1992) Flavor characteristics of Piper betle L. J Spices & Aromatic Corps., 1: 30-38

# ANTI-ACNE BIOMARKER

*by* Gelgel Wirasuta

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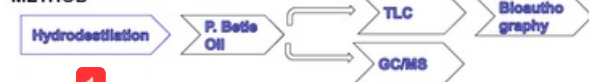
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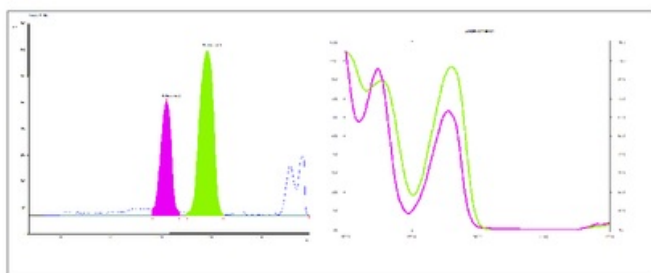
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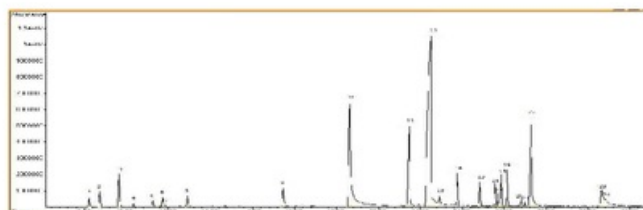
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# ANTI-ACNE BIOMARKER

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