


See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/261571872>


## Composition of the Essential Oils of *Thymus pectinatus* Fisch. et Mey. var. *pectinatus* at Different Stages of Vegetation

Article in *Journal of Essential Oil Research* - December 2011  
DOI: 10.1002/1522-2675(201112)23:12<1147::AID-JEOA1147>3.0.CO;2-1

CITATIONS  
5


4 authors, including:

 **K. Husnu Can Baser**  
Near East University  
1,194 PUBLICATIONS 17,885 CITATIONS  
[SEE PROFILE](#)

 **Güleendam Tümen**  
Balıkesir University  
193 PUBLICATIONS 2,587 CITATIONS  
[SEE PROFILE](#)

Some of the authors of this publication are also working on these related projects:

 Natural Product Discovery View project

 *Fritillaria persica* L. Türü Üzerinde Taksonomik, Morfolojik, Anatomik ve Fitokimyasal Çalışmalar View project

READS  
28

 **M. Kurkcuoglu**  
Anadolu University  
241 PUBLICATIONS 3,197 CITATIONS  
[SEE PROFILE](#)

# Composition of the Essential Oils of *Thymus pectinatus* Fisch. et Mey. var. *pectinatus* at Different Stages of Vegetation

K.H.C. Baser,\* B. Demirci and M. Kürkçüoğlu

Medicinal and Aromatic Plant and Drug Research Centre (TBAM)

Anadolu University, 26470 Eskisehir, Turkey

G. Tümen

Faculty of Education, Department of Biology, Balikesir University, 10100 Balikesir, Turkey

## Abstract

Water-distilled essential oils from herbal parts of *Thymus pectinatus* var. *pectinatus*, endemic to Turkey, collected at different stages of vegetation were analyzed by GC/MS. Thirty-eight compounds were identified in the oil from material collected at a very young stage representing 99% of the total components; 28 components were identified in the oil from material collected at pre-flowering stage representing 99.8% of the total components detected; and in the oil from flowering material 27 compounds were identified representing 99.3% of the total components. Thymol (47.81%, 61.67% and 52.48%), p-cymene (20.74%, 8.88% and 14.62%) and  $\gamma$ -terpinene (11.11%, 11.26% and 12.13%) were the main components in the oils, respectively.

## Key Word Index

*Thymus pectinatus* var. *pectinatus*, Labiatae, essential oil composition, thymol, p-cymene,  $\gamma$ -terpinene.

---

## Plant Name

*Thymus pectinatus* Fisch. et Mey. var. *pectinatus* (1).

## Source

Plant materials were collected from Sivas: Sarkisla in Turkey on the following dates:

A = At a very young stage on May 10, 1995

B = At pre-flowering stage on July 3, 1995

C = At flowering stage on August 2, 1995

Voucher specimens are kept at the Herbarium of the Faculty of Pharmacy, Anadolu University in Eskisehir, Turkey (ESSE 11416, 11417, 11478 for A, B and C, respectively).

## Plant Part

Dried aerial parts were water distilled for 3 h using a Clevenger-type apparatus to yield 0.3% (A), 1.2% (B) and 1.8% (C) oils.

\*Address for correspondence

Received: April 1997  
Accepted: June 1997

**Table I. Percentage composition of the oils of *Thymus pectinatus* var. *pectinatus* produced from plants harvested at three stages of maturity**

Compound	A	B	C	Compound	A	B	C
$\alpha$ -pinene	0.3	0.2	0.5	camphor	0.1	<0.1	-
$\alpha$ -thujene	0.3	0.5	1.0	linalool	0.1	0.1	0.1
camphene	0.3	0.2	0.4	cis-sabinene hydrate	0.4	0.4	0.3
$\beta$ -pinene	0.1	0.1	0.2	octanol	t	-	-
$\delta$ -3-carene	-	-	<0.1	trans-p-menth-2-en-1-ol	t	-	-
myrcene	1.0	1.4	1.9	bornyl acetate	0.1	-	0.1
$\alpha$ -phellandrene	0.1	0.1	0.2	terpinen-4-ol	0.9	0.6	0.8
$\alpha$ -terpinene	1.3	1.4	1.6	$\beta$ -caryophyllene	0.1	0.1	t
limonene	0.3	0.3	0.4	cis-dihydrocarvone	0.1	0.1	0.1
1,8-cineole	1.2	0.5	0.8	$\alpha$ -terpineol	0.2	0.1	0.2
$\beta$ -phellandrene	0.1	0.1	0.2	borneol	3.8	3.3	3.3
$\gamma$ -terpinene	11.1	11.3	12.1	cuminaldehyde	0.1	-	-
5-methyl-3-heptanone	0.1	0.1	-	p-cymen-8-ol	0.6	0.1	0.1
p-cymene	20.7	8.9	14.6	thymyl acetate	0.7	0.1	<0.1
terpinolene	0.1	0.1	0.1	caryophyllene oxide	0.1	0.1	<0.1
3-octanol	0.1	-	-	cumin alcohol	0.1	-	-
$\alpha$ ,p-dimethylstyrene	0.1	-	-	tetradecanol	0.1	-	-
1-octen-3-ol	0.1	0.1	-	thymol	47.8	61.7	52.5
trans-sabinene hydrate	0.7	0.5	0.7	carvacrol	5.8	7.8	7.1
(Z)-3-hexenyl 2-methyl-butyrate	0.1	-	-				

t = trace (<0.01%)

### Previous Work

The oil from aerial parts of *T. pectinatus* var. *pectinatus* was reported to contain 47.8% thymol (2).

### Present Work

The oils were analyzed by GC/MS using a Hewlett-Packard GCD system. Innowax FSC column (60 m x 0.25 mm) was used with helium as the carrier gas. GC oven temperature was kept at 60°C for 10 min and programmed to 220°C at a rate of 4°C/min, and then kept constant at 220°C for 10 min and programmed at 240°C at a rate of 1°C/min. Split flow was adjusted at 50 mL/min. The injector and detector temperatures were at 250°C. MS were taken at 70 eV. Mass range was from m/z 35 to 425. Library search was carried out using Wiley GC/MS Library and TBAM Library of Essential Oil Constituents. Relative percentage amounts were calculated from TIC by the computer. The compounds identified in the oils are shown in Table I.

### References

1. P. H. Davis, *Flora of Turkey and the East Aegean Islands*. Vol. 7, p 360, University Press, Edinburgh (1982).
2. F. Ilisulu-Meriçli, *Evaluation of thymol contents of endemic Thymus species growing in Turkey*. Doga Tr, Tip ve Ecz. D, **10**(2), 187-200 (1986).