CHEMICAL COMPOSITION OF ESSENTIAL OILS FROM *Athamanta sicula*

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The genus *Athamanta* L. (Apiaceae) consists of about nine species, which are distributed mainly in southeastern Europe. Some of the *Athamanta* species are used in traditional medicine as antiseptics, diuretics, and in the therapy of sclerosis [1]. Phytochemical studies of species from the genus *Athamanta* report the presence of coumarins [2–5], flavonoids [6], and fatty acids [7].

Athamanta sicula L. is an annual perennial herb, growing to a height of 30 to 100 cm. It occurs in calcareous vertical cliffs 100 meters to 1500 meters above sea level and is widespread in South Italy, particularly in Sicily. In the popular medicine, it is known as "spaccapietre" (rock splitters), and infusions of its fresh roots are indicated as a diuretic and for treatment of urinary tract diseases; more specifically it is used to dissolve kidney stones [8, 9]; the habitat, and ecological and phytosociological characteristics are also reported [10].

The chemical composition of the essential oils of the flowers and fruits of *Athamanta haynaldii* were found to contain appreciable amounts of myristicin (39 % ca. of the total oil) in addition to monoterpene and sesquiterpene hydrocarbons. In the essential oil of ripe fruits of *A. haynaldii* the main component was β-pinene [11].

GC analysis of the essential oil aerial parts of *Athamanta macedonica* showed the presence of sabinene as the main component (50.47%) [12].

TABLE 1. Percentage Composition of Essential Oils of Flowers, Stems, and Leaves of *Athamanta sicula* L.

Compound	RI	Flowers	Stems	Leaves
		%		
α-Pinene*	940	1.5	1.2	1.8
Camphene	955	0.2	0.5	0.8
Sabinene	977	0.6	0.3	1.5
β-Phellandrene	1005	Tr.	Tr.	1.2
Terpinolene	1071	-	-	1.4
Bornyl acetate	1283	1.1	0.2	0.1
α-Copaene	1371	1.5	0.5	0.2
γ-Muurolene	1472	Tr.	-	-
Isoledene	1515	0.9	2.0	0.8
[1]Myristicin*	1520	4.8	4.1	4.5
α-Calacorene	1537	0.1	0.7	0.3
Elemicin*	1549	1.3	1.5	1.4
β-Calacorene	1554	-	Tr.	0.3
τ-Muurolol	1640	-	0.1	-
α-Cadinol	1652	-	0.1	Tr.
[1]Apiol*	1695	87.8	85.2	80.41

RI: retention indices on DB-5 capillary column. Tr.: trace (<0.05%).

*Co-injection with authentic samples.

[1]: structures were confirmed by ^{1}H NMR data of the compounds isolated by preparative TLC.

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In the present work we analyzed the chemical composition of essential oils from different parts of *Athamanta sicula* L.

The plant material originated from the slopes of Monte Pellegrino (606 m above sea level) near Palermo and was collected in May, 2006. Each essential oil was obtained by hydrodistillation from 10 g of fresh flowers, stems, and leaves. All the samples contained as the main constituent apiol (87.8, 85.2, and 80.41 % respectively), together with small amounts of myristicin and elemicin (Table 1).

In our previous investigation of the essential oil composition from leaves and fruits of *Athamanta sicula* L. collected in the Madonie area of central Sicily, we found the myristicin as the main component (97.6 and 41.3 %, respectively) [13].

The observed differences in composition in the analyzed essential oils of *Athamanta sicula* L., collected in the Palermo area could be explained by different habitat conditions or from the occurrence of various plant chemotypes.

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