

Essential Oil of *Elyonurus muticus* (Sprengel) O.Kuntze (Gramineae)

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Abstract

Twelve compounds were identified by GC/MS in the essential oil of *Elyonurus muticus* leaves, native in the Brazilian Pantanal. Spathulenol (18.6%), β -caryophyllene (17.9%) and camphene (11.5%) were the major components found in the oil.

Key Word Index

Elyonurus muticus, Gramineae, essential oil composition, β -caryophyllene, camphene, spathulenol.

Introduction

Elyonurus muticus (Sprengel) O.Kuntze, is native in Brazilian Pantanal, Mato Grosso do Sul. It is dominant in a type of grassland, burning even green, due to the oil. This plant is not appropriate to cattle feeding, as the bitter taste is transmitted to the milk (1-3), but only the regrowth is grazed.

The genus *Elyonurus* is common in South America, growing from Brazil to Paraguai and Argentina (4,5). *E. muticus* of Argentinian origin was found to contain more than 90% citral (3). The oil of *E. latiflorus* contained 3.0-5.0 % citral, while *E. viridulus* oil contained about 90% citral (4,6,7). Also, in an oil of *E. rostratus* (*E. muticus*) geranial (49%), neral (29.7%), geraniol (8.2%), and nerol (5.4%) were found (8). *E. candidus*, considered a variety of *E. latiflorus*, possessed 32.2% of neral and 60.7% of geranial (4). In one species of *Elyonurus* 1,8-cineole, camphene, hydrocarbons and a sesquiterpenic alcohol were found (4).

In this paper, we are presenting the chemical composition of the oil isolated from leaves of *E. muticus* collected in the Pantanal of Mato Grosso do Sul.

Experimental

Plant Material and Oil Isolation: *Elyonurus muticus* (Sprengel) O.Kuntze was collected in April 1996 in the Brazilian Pantanal, Mato Grosso do Sul. Voucher specimen was deposited in the CPAP Herbarium, number AC Cervi 4249.

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Table I. Percentage composition of the oil of *Elyonurus muticus* (Sprengel) O. Kuntze

Components ^a	Percentage	RI calculated		RI Lit	Identification method
		DB-1	DB-5		
α -thujene	0.5	912	-	931	b
α -pinene	0.9	922	-	939	a,b,c
camphene	11.5	933	947	953	a,b,c
myrcene	4.5	979	990	991	a,b,c
limonene	0.2	1015	1027	1015	a,b,c
(Z)-trimenal [†]	3.0	1374	1389	1395	b
β -caryophyllene	17.9	1397	1418	1418	a,b,c
(Z)- β -farnesene	4.5	1404	1433	1443	a,b,c
α -humulene	4.0	1428	1452	1454	a,b,c
spathulenol	18.6	1542	1576	1576	b
<i>trans</i> -sesquisabinene hydrate	4.8	1545	1580	1580	b
cedren-8-en-9 α -ol	2.8	1598	1641	1644	b
not identified	26.8				

Identification Methods: a -- GC/MS library search; b = MS. Lit (9-11); c = co-injection with authentic sample;
^a Components are listed according to their elution on DB-1 and DB-5 capillary column;
[†] also known as (Z)-2,5,9-trimethyl-4,9-decadienal

Essential oil (1.8 mL) was obtained from 408 g of fresh leaves by hydrodistillation in a Clevenger-type apparatus, for 8 h.

Analysis: The oil was analyzed by GC/MS (Shimadzu, model QP-5000) equipped with an electron impact (70 eV) detector, and a (25 mm x 0.25 mm x 0.25 μ m) fused silica capillary column (DB-1). The carrier gas was helium (1.7 mL/min); 1 μ L of the sample was injected. The programmed temperature was 50°-160°C, 2°C/min; 160°C (min); 160°-280°C, 10°C/min. Injector temperature was 240°C and detector, 230°C, split 1/35. The retention index was obtained with a DB-1 column, in the same conditions of the analyze, and in the DB-5 (30 mm x 0.25 mm x 0.25 μ m) column, with programmed temperature of 60°-240°C, 3°C/min; split 1/20, injector and detector at 220°-240°C, respectively, maintaining the helium flow, constant (1 L/min), by programmed pressure. The oil components were identified by comparison of their retention index, MS literature data, equipment database and co-injection of authentic samples.

Results and Discussion

The compounds identified in the oil are listed in Table I. Among the 18 compounds found, sesquiterpenes represented 52.6% and monoterpenes 17.7%. Spathulenol (18.6%) and β -caryophyllene (17.9%) were the major components; the monoterpenes camphene (11.5%) and β -myrcene (4.5%) were also present.

In other studies, species of *Elyonurus* were found to contain high amount of aldehydes as citral, citronellal, neral and geranial (citral). In this Brazilian species these compounds were not found. The material was at mature stage. There might be seasonal variation in oil content.

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