GC—MS RESEARCH. I. ESSENTIAL OIL FROM *Stevia rebaudiana*

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Stevia rebaudiana Bertoni is an endemic plant, it grows naturally only in Paraguay, certain countries of South America, Southeast Asia, and Japan [1-3].

According to the literature [4-7], the compositions of essential oils from one plant or another can differ substantially depending on its habitat. It is also known that populations and even individual plants for which the essential oil has a composition differing from that typical of a given species are encountered in nature. For example, Argentine [8] and Georgian researchers [9] studying compositions of essential oils from *S. achalensis* Hieronymus and *S. rebaudiana* Bertoni, respectively, identified in the former 41 constituents; in the latter, 43. The qualitative compositions of the identified constituents were only 50% the same.

Herein we communicate results from a study of the composition of essential oil obtained from leaves of *S. rebaudiana*, which have been proposed as a herbal tea by food-additive producer OOO S-Stevia, Sevastopol′.

Essential oil was isolated by steam distillation. The yield was 0.35% calculated for air-dried raw material.

TABLE 1. Composition of Essential Oil from *Stevia rebaudiana* Bertoni Leaves

Component	Retention time, min	Content, %	Component	Retention time, min	Content, %
Unident.	6.34	0.658	Caryophyllene α-oxide	15.30	8.496
1-Hexanol-2-ethyl	6.67	0.898	Unident.	15.41	0.908
Linalool	8.07	1.088	Humulen-6,7-epoxide	15.60	2.531
Unident.	8.13	0.681	Germacrene D	15.92	2.827
Menthol	9.42	0.731	Unident.	16.12	0.744
Dodecane	9.81	1.052	1-Naphthalenol	16.08	2.548
Pyrrol-2,5-dione, 3-ethyl-4-methyl	10.36	0.841	Unident.	16.83	0.953
Tetradecane	12.78	0.684	Unident.	16.87	1.281
Caryophyllene	13.20	0.790	3α-metaazulene,octahydro-1,4,9-tetramethyl	16.28	1.803
Unident.	13.56	0.629			
Humulene	13.66	1.003	2-Pentadecanon-6,10,14-trimethyl	18.00	1.855
β-Lonone	14.00	2.511	Unident.	19.35	0.975
Unident.	14.40	1.257	Manol oxide	19.70	5.129
Unident.	14.48	1.592	Epimonol oxide	19.92	0.667
Dihydroactinidiolide	14.63	8.630	Neophytadiene	20.61	1.769
Unident.	15.06	0.958	Unident. (M-289)	21.76	1.409
trans-Nerolidol	14.91	5.975	Longikaemfenylol	22.46	3.617
Spatulenol	15.21	7.324	Eicosane	25.34	0.913

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Essential oil was studied by GC—MS on a Hewlett—Packard G-1800A GC with a quadrupole mass spectrometer as the detector. We used an HP-5 capillary quartz column (copolymer 5% diphenyl:95% dimethylsiloxane), length 30 m, internal diameter 0.25 mm, stationary-phase thickness 0.25 μm. Helium was used as the carrier gas at flow rate 1 mL/min. The column temperature gradient was 4 min at 70°C, from 70 to 280°C at a rate of 10°C/min, and 10 min at 280°C. The injector temperature was 280°C; ion source, 175°C.

The percent composition of essential oil was calculated from peak areas without using correction coefficients. Constituents were identified by comparing retention times and complete mass spectra with data in the Wiley 275 and NIST 02 electronic libraries.

More than 120 constituents were observed in essential oil from *S. rebaudiana*. Of these, only those for which the content in the oil was greater than 6% were identified. The presence of a large number of components with a low content made it difficult to identify minor constituents. Table 1 gives the results of the identification.

Of the 35 constituents corresponding to these conditions, only 23 were identified. The main constituents of essential oil obtained from leaves of *S. rebaudiana* were dihydroactinidiolide, caryophyllene α-oxide, spatulenol, *trans*-nerolidol, manol oxide, and longikaempfenylol. Germacrene D, 1-naphthalenol, humulen-6,7-epoxide, and β-lonone occurred in lower and approximately equal amounts.

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