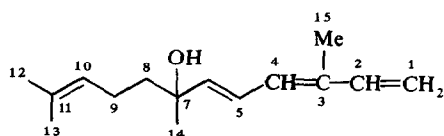


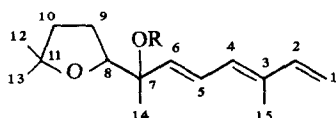
Table 1. $^1\text{H-NMR}$ -Daten von **8**, **9** und **10** (CDCl_3 , 270 MHz, δ -Werte)

	8	9	10
1c-H	<i>d</i> (br) 5.21	<i>d</i> (br) 5.03	<i>d</i> (br) 5.03
1t-H	<i>d</i> (br) 5.05	<i>d</i> (br) 5.21	<i>d</i> (br) 5.20
2-H	<i>dd</i> 6.42	<i>dd</i> 6.40	<i>dd</i> 6.40
4-H	<i>d</i> 6.08	<i>d</i> (br) 6.05	<i>d</i> (br) 6.05
5-H	<i>dd</i> 6.59	<i>dd</i> 6.55	<i>dd</i> 6.58
6-H	<i>d</i> 5.81	<i>d</i> 5.87	<i>d</i> 5.87
8-H	<i>m</i> 1.60	<i>t</i> 3.87	<i>t</i> 4.11
9-H	<i>m</i> 2.02	<i>m</i> 1.89	<i>m</i> 1.8–2.1
10-H	<i>t</i> (br) 5.13	<i>m</i> 1.89	<i>m</i> 1.8–2.1
12-H	<i>s</i> (br) 1.59	<i>s</i> 1.25	<i>s</i> 1.49
13-H	<i>s</i> (br) 1.67	<i>s</i> 1.15	<i>s</i> 1.51
14-H	<i>s</i> 1.31	<i>s</i> 1.37	<i>s</i> 1.51
15-H	<i>d</i> 1.87	<i>d</i> 1.87	<i>d</i> 1.85
OAc	—	—	<i>s</i> 1.97

J (Hz): 1c,2 = 10; 1t,2 = 17; 4,5 = 10; 4,15 = 1; 5,6 = 15; 8,9 = 7; 9,10 = 7.



7: *cis*
8: *trans*



9: R = H **10:** R = Ac

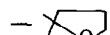
EXPERIMENTELLES

IR: Beckman IR9, CCl_4 ; $^1\text{H-NMR}$: Bruker WH 270, δ -Werte; MS: Varian MAT 711, 70 eV, Direktionlaß. Die luft-trocken zerkleinerten Pflanzenteile (Herbar Nr. RMK 7268) extrahierte man mit Et_2O -Petrol (1:2) und trennte die erhaltenen Extrakte zunächst grob durch SC (Si gel, Akt. St. II) und weiter durch DC (Si gel GF 254). Als Laufmittel dienten Et_2O -Petrol-Gemische. 80 g Wurzeln ergaben 60 mg **1**, 28 mg **2**, 18 mg **3**, 47 mg **4**, 17 mg **5** und 11 mg **6**, während 110 g oberirdische Teile 290 mg **1**, 12 mg **7**, 11 mg **8** (beide Et_2O -Petrol, 1:3), 24 mg **9** (Et_2O -Petrol, 1:3), 14 mg **2** und 10 mg **6** lieferten.

3(Z)-6,7-Dihydro-5,6-dehydro-7-hydroxy-α-farnesen (7). Farbloses Öl, UV: λ_{max} = 279, 268, 259 nm (Et_2O), IR: OH 3602; C=C 3080, 1620; *trans* CH=CH 970; —CH=CH₂ 990, 920 cm^{-1} . MS: M^+ *m/e* 220.182 (4%) (ber. für $\text{C}_{15}\text{H}_{24}\text{O}$ 220.182); —H₂O 202 (6); $\text{Me}_2\text{C}=\text{CH}_2\text{CH}_2^+$ 69 (100).

3(E)-6,7-Dihydro-5,6-dehydro-7-hydroxy-α-farnesen (8). Farbloses Öl, IR: OH 3600; *tr* CH=CH 1645, 975; CH=CH₂ 990, 905 cm^{-1} . MS: M^+ *m/e* 220.182 (3%) (ber. für $\text{C}_{15}\text{H}_{24}\text{O}$ 220.182); — $\text{Me}_2\text{CH}=\text{CHCH}_2\text{CH}_2^+$ 137 (52); $\text{Me}_2\text{C}=\text{CHCH}_2^+$ 69 (100).

Ageraborniol (9). Farbloses Öl, IR: OH 3600; C=C 3080, 1620; *trans* CH=CH 985; CH=CH₂ 915 cm^{-1} . MS: M^+ *m/e* 236.178 (82%) (ber. für $\text{C}_{15}\text{H}_{24}\text{O}_2$ 236.178); — CH_3 221 (27);



— 137 (22); C_7H_9^+ 93 (100). 20 mg **9** in 1 ml Ac_2O erwärmte man mit 0.05 ml Py und 50 mg NaOAc 5 Stunden zum Sieden. Nach DC (Et_2O -Petrol 1:10) erhielt man 5 mg **10**, farbloses Öl, IR: OAc 1740, 1255; *trans* CH=CH 970; CH=CH₂ 990, 900 cm^{-1} .

Anerkennung—Herrn Dr. R. M. King, Smithsonian Institution, Washington, danken wir für das Pflanzenmaterial, der Deutschen Forschungsgemeinschaft für die Förderung dieser Arbeit.

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NEW SESQUITERPENES FROM *PETERAVENIA SCHULTZII**

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(Received 9 September 1977)

Key Word Index—*Peteravenia schultzii*; Eupatorieae; Compositae; new nerolidol derivative; new eudesmane ketone.

The roots of *Peteravenia schultzii* (Schmitts.) K. et R. afford, together with the known nerolidol derivative **1**, a second one, the structure being elucidated as **2** by

spectroscopic methods (see Table 1). However the configurations at C-7, 9 and 10 are not clear. Further, a new selinene derivative has been isolated. Its structure follows mainly from detailed NMR investigations; all data (Table 2) are in agreement with γ -selinen-8-one (**3**). The aerial parts also contain **1** and **3** together with germacrene D (**4**). The presence of the nerolidol deriva-

* Part 127 in the series 'Naturally Occurring Terpene Derivatives'; Part 126.: Bohlmann, F. and Suwita, A. (1978) *Phytochemistry* **17**, 560.

Table 1. $^1\text{H-NMR}$ -data of **2** (270 MHz, δ -values)

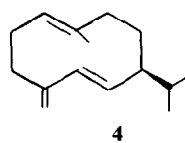
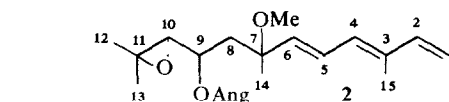
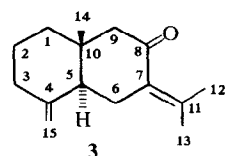
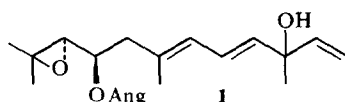
1c-H	<i>d</i> (br) 5.04	10-H	<i>d</i> 2.73
1t-H	<i>d</i> (br) 5.22	12-H	} <i>s</i> 1.29
2-H	<i>dd</i> 6.38	13-H	
4-H	<i>d</i> (br) 6.03	14-H	<i>s</i> 1.38
5-H	<i>dd</i> 6.46	15-H	<i>s</i> (br) 1.85
6-H	<i>d</i> 5.65	OCOR	<i>qq</i> 6.03
8-H	<i>m</i> 2.11		<i>dq</i> 1.96
9-H	<i>ddd</i> 4.92		<i>dq</i> 1.86
OMe	<i>s</i> 3.17		

$J(\text{Hz})$: 1c,2 = 10; 1t,2 = 17; 4,5 = 10; 5,6 = 15; 8,9 = 8; 8',9 = 3.5; 9,10 = 8.

Table 2. $^1\text{H-NMR}$ data of **3** (270 MHz, δ -values)

	C_6D_6	Δ^*		Δ^*
1,2-H	<i>m</i> 1.3-1.0		9 β -H	<i>d</i> 2.32
3 α -H	<i>ddd</i> (br) 1.87	0.02	12-H	<i>d</i> 2.09
3 β -H	<i>d</i> (br) 2.26	0	13-H	<i>d</i> 1.48
5 α -H	<i>dd</i> 1.90	0.20	14-H	<i>s</i> 0.67
6 α -H	<i>dd</i> 2.57	0.16	15-H	<i>q</i> 4.81
6 β -H	<i>ddqq</i> 2.19	0.14	15'-H	<i>q</i> 4.56
9 α -H	<i>d</i> (br) 1.99	0.53		

$J(\text{Hz})$: 3 α ,3 β = 13; 5,6 α = 4; 5,6 β = 12; 6 α ,6 β = 15; 9 α ,9 β = 15; 6 β 12 = 6,13 = 1; 3,15 = 1.3. * Δ -values after addition of 0.1 equivalents of $\text{Eu}(\text{fod})_3$.



tives **1** and **2** may show some relationship of the genus to *Brickellia*, where compounds of this type are common [1]. Further studies, however, are necessary to establish this assumption.

EXPERIMENTAL

IR: Beckman IR9, CCl_4 ; NMR: Bruker WH 270, δ -values; MS: Varian MAT 711, 70 eV. The air-dried plant material (voucher RMK 7324) was extracted with Et_2O -petrol (1:2) and the extracts first separated by column chromatography (Si gel, act. grade II) and further by TLC (Si gel GF 254) using Et_2O -petrol mixtures. 52 g of roots yielded 8 mg **3**, 3 mg **2** and 12 mg **1**, while 98 g of aerial parts afford 3 mg **4**, 20 mg **3** (Et_2O -petrol, 1:10) and 2 mg **1**.

7-Methoxy-6,7,10,11-tetrahydro-5,6-dehydro-10,11-epoxy-9-angeloyloxy- α -farnesene (**2**). Colourless oil, IR: $\text{C}=\text{C}$ CO_2R 1720, 1650; tr $\text{CH}=\text{CH}$ 1620, 970; $\text{CH}=\text{CH}_2$ 3100, 990, 895 cm^{-1} UV max (Et_2O) at 269, 280 nm MS: M^+ m/e 348.230

(95%) (calc. for $\text{C}_{21}\text{H}_{32}\text{O}_4$ 348.230); $-\text{Me}_2\text{C}=\text{CHCHO}$

Ang 151 (99); $\text{C}_4\text{H}_7\text{CO}^+$ 83 (100).

γ -Selinene-8-one (**3**). Colourless oil, IR: $\text{C}=\text{C}-\text{C}=\text{O}$ 1680, 1640; $\text{C}=\text{CH}_2$ 3080, 890 cm^{-1} . MS: M^+ m/e 218.167 (100%) (calc. for $\text{C}_{15}\text{H}_{22}\text{O}$ 218.167); $-\text{CH}_3$ 203 (11); 203 $-\text{CO}$ 175 (14).

$$[\alpha]_{24}^{\text{D}} = \frac{589}{-87.4} \quad \frac{578}{-90.8} \quad \frac{546}{-103.3} \quad \frac{436 \text{ nm}}{-155.3^\circ} \quad (c = 1.8, \text{CHCl}_3)$$

Acknowledgements—We thank the 'Deutsche Forschungsgemeinschaft' for supporting this work and Dr. R. M. King, Smithsonian Institution, Washington, for the plant material.

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NEUE GUAJANOLID-DERIVATE AUS *ERLANGAEA INYANGANA**

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(Eingegangen am 23 August 1977)

Key Word Index—*Erlangea inyangana*; Vernoniae; Compositae; new guaianolides.

Aus der hauptsächlich in Afrika vorkommenden Gattung *Erlangea*, Tribus Vernoniae, ist bisher nur *E. rogersii*

*125. Mitt. in der Serie 'Natürlich vorkommende Terpen-Derivate'; 124. Mitt. Bohlmann, F., Ehlers, D. und Zdero, C. (1978) *Phytochemistry* **17**, 467.

S. Moore untersucht worden [1]. Neben Polyinen kommen hier ungewöhnliche Cumarin- bzw. Chromon-Derivate vor. Die oberirdischen Teile von *E. inyangana* (N. E. Br.) B. L. Burtt, enthalten weder Polyine noch Cumarine. Dagegen isoliert man neben Germacren D