

QUERCETIN 3,7,3',4'-TETRAMETHYL ETHER FROM
GERMANIUM MACRORHIZUM

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Key Word Index—*Geranium macrorrhizum*; Geraniaceae; Zdravets oil, quercetin 3,7,3',4'-tetramethyl ether.

Plant. Germanium macrorrhizum L. *Source.* From the extract of *Geranium macrorrhizum* L. (zdravets oil), which was supplied by P. Robert & Cie, Grasse, France. *Previous work.* Bulgarian zdravets oil was first studied by Wienhaus and Scholz¹ who isolated a sesquiterpene, germacrone whose structure was established by Šorm's group.²

The rare naturally occurring flavonol quercetin 3,7,3',4'-tetramethyl ether was isolated from the cactus, *Ariocarpus Retusus* by Dominguez *et al.*³ and from *Aframomum giganteum* K. Schum. by Vidari *et al.*⁴ We now report its isolation from the precipitate deposited by Zdravets oil as light yellow crystals m.p. 155° (165–167°),³ yield 0.4%. IR, NMR, UV and MS and elemental analysis were identical with that of the authentic quercetin tetramethyl ether,⁵ and its acetyl derivative was also identical with authentic sample.⁶

Spectral data. 3,7,3',4'-Tetramethyl quercetin; IR (KBr disc). 1657, 1607, 1594, 1515, 1499, 1153, 1025, 1005, 950, 821, 800, 770, 700 cm⁻¹. NMR.* (CDCl₃–CCl₄) 3.86, (s, 6H) 3.75 (s, 6H) 6.36 (q, 2H) 6.97 (d, 1H), 7.66 (m, 2H), 12.59 (s, 1H), (δ, ppm); UV λ_{max} (EtOH). 350, 270, 255 nm (Found: C, 63.57, 63.41; H, 4.99, 5.16. Calc. for C₁₉H₁₈O₇; C, 63.68; H, 5.06%).

5-Acetyl-3,7,3',4'-tetramethyl quercetin. m.p. 170° (167–169°).⁶ IR (KBr disc). 1770, 1640, 1610, 1518, 1160, 1149, 1080, 998, 906, 818 cm⁻¹. NMR (CDCl₃). 2.47 (s, 3H), 3.85 (s, 3H), 3.98 (s, 3H), 4.00 (s, 6H), 6.75 (q, 2H), 7.08 (s, 1H), 7.69 (m, 2H) (δ ppm).

* The NMR spectra were measured by Varian T-60 NMR spectrometer.

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