

related diterpenes derivatives,^{3,5} or cryptic irritants such as 12,13,20-tri-esters of phorbol and related diterpenes.^{3,5}

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⁵ UPADHYAY, R. R. and HECKER, E. in preparation.

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FLAVONES AND FLAVONOLS IN EXUDATE OF *SALVIA GLUTINOSA*

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Key Word Index—*Salvia glutinosa*; Labiatae; flavonoids; kumatakenin; ayanin; retusin.

Plant. Salvia glutinosa L. *Source*. Botanical Garden, University of Heidelberg. *Previous work*. α -Amyrin, ursolic acid and nonacosane from flowers and calyces of *S. glutinosa*;¹ sterols and flavone salvigenin from *S. triloba*;² ultrastructure of glands of *S. glutinosa*.³

Present work. Aerial parts of whole plant were dipped into Et₂O and the solution concentrated to give an oil.* Separation into several fractions was effected on a column of silica gel (C₆H₆/increasing quantities of MeCOEt and MeOH) to give α -amyrin as the main component, other lipid material (not identified, comp.¹) and flavonoids. Isolation of pure flavonoids was by preparative TLC on polyamide (C₆H₆–petrol.–MeCOEt–MeOH, 60:26:7:7 and C₆H₆–dioxane–MeOH, 8:1:1⁴) and identification by co-chromatography with authentic samples and UV spectra.

RESULTS

The lipophilic exudate of *Salvia glutinosa* contains very small amounts of the flavones apigenin and gengkwanin (apigenin 7-methyl ether), and of the flavonols isokaempferide (kaempferol 3-methyl ether), kumatakenin kaempferol 3,7-dimethyl ether; UV λ_{\max} 350 and 268 nm, with added AlCl₃ shift to 394 nm, with added NaOEt shift to 390 nm, no shift with NaOAc), ayanin (quercetin 3,7,4'-trimethyl ether; UV λ_{\max} 355 and 256 nm, with added AlCl₃ shift to 398 nm, with added NaOEt shift to 398 nm, no shift with NaOAc), and possibly retusin (quercetin 3,7,3',4'-tetramethyl ether; concluded from TLC comparison only).

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¹ MUNTAN G. E. and LAZUR'ERSKII, G. V. (1963) *Chem. Abstr.* **64**, 8547 h. (1966).

² ULUBELEN, A., ÖZTÜRK, S. and ISILDATICI, S. (1968) *J. Pharmac. Sci.* **57**, 1037.

³ SCHNEPF, E. (1972) *Biochem. Physiol. Pflanzen* **163**, 111.

⁴ WOLLENWEBER, E. (1970) Dissertation, Heidelberg.