

[Chem. Pharm. Bull., 35, 3909 (1987)]

**Flavonoids Syntheses. VI. Synthesis and Spectral Properties of 4-Arylcoumarins (Neoflavones).**

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Eight neoflavones (5, 7-dihydroxy-, 5, 7, 2'-trihydroxy-, 5, 7, 3'-trihydroxy-, 5, 7, 4'-trihydroxy-, 5, 7, 2', 5'-tetrahydroxy-, 5, 7-dihydroxy-2'-methoxy-, 7-hydroxy-, and 7, 3'-dihydroxyneoflavone) were prepared by the Pechmann condensation of phloroglucinol or resorcinol with benzoylacetic acid ethyl esters for examination of their spectral properties. In the mass spectra, the neoflavones lacking an O-function at C-2' showed stable fragments of  $[M^+-28]$  caused by decarboxylation. On the other hand, in the case of 2'-oxygenated neoflavones, dehydroxylation or demethylation between C<sub>5</sub>-OH and substituents at C-2' occurred to give  $[M^+-17]$  or  $[M^+-59]$ . Other spectral data showed no specific features that could be used to characterize the structures.

[Z. Naturforsch., 42c, 1063 (1987)]

**Novel Flavonoids from the Fern *Notholaena sulphurea*.**

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The major constituent of the yellow frond exudate of the fern *Notholaena sulphurea* was identified by spectroscopic methods as 3, 5, 2'-trihydroxy-7-methoxy-8-acetoxyflavone and its structure was confirmed by synthesis. This novel natural flavonoid was also detected in the frond exudate of five other *Notholaena* species. In the yellow form of *N. sulphurea*, the rare 5, 2'-dihydroxy-7,8-dimethoxyflavone was also found, along with some trivial flavonoids. The white form of *N. sulphurea* produces three dihydrochalcones that are accompanied by some kaempferol methyl ethers and apigenin-7-methyl ether. The 3-acetoxy as well as the 3-butyroxy and the 4'-butyroxy derivatives of 7-methyl aromadendrin were also identified in this material.

[Yakugaku Zasshi, 107, 827 (1987)]

**Synthesis of Flavonoids in *Scutellaria* spp. II. Synthesis of 2',6'-Dioxygenated Flavones.**

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Five flavones dioxygenated at C-2' and C-6' (5, 7, 2', 6'-tetrahydroxy- (1), 5, 7, 2'-trihydroxy-6'-methoxy- (2), 5, 2'-dihydroxy-7,8,6'-trimethoxy- (3), 5,2', 6'-trihydroxy-7,8-dimethoxy- (4) and 5,7,2'-trihydroxy-8, 6'-dimethoxyflavone (5)) have been isolated from *Scutellaria* spp.. Among them 1 and 2 were isolated from *S. baicalensis*, 3 was from *S. rivularis*, 4 was from both *S. baicalensis* and *S. viscidula*, and 5 was from *S. discolor*, respectively. To confirm these constituents characterized the genus *Scutellaria*, syntheses of 1-5 were described in this paper. Spectroscopic comparison of the synthetics with the corresponding natural flavones confirmed the respective structures.