

A NEW FLAVONE GLYCOSIDE  
FROM *Campanula patula*

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Continuing an investigation of the flavonoid composition of the epigeal part of *Campanula patula* L., in addition to luteolin and luteolin 7-O- $\beta$ -D-glucopyranoside [1], we have isolated a new flavone glycoside which we have called patuloside.

The glycoside has the composition  $C_{20}H_{18}O_{10}$ , mp 211-213°C (decomp.),  $[\alpha]_D^{21} -67^\circ$  (c 0.3; methanol). UV spectrum (in ethanol):  $\lambda_{max}$  257 and 352 nm (log  $\epsilon$  4.19, 4.20). It gave a positive reaction with magnesium and hydrochloric acid, and the orange pigment so obtained did not pass into octanol, which shows its glycosidic nature [2]. The IR spectrum included absorption bands at ( $cm^{-1}$ ) 1670 (C = O of a  $\gamma$ -pyrone), 1510, 1575, and 1610 (aromatic nucleus), and a broad band at 3200-3450  $cm^{-1}$  (hydroxy groups). Two bands, at 1048 and 1081  $cm^{-1}$ , show the presence in the substance of a furanose ring of a sugar residue [3].

On acid hydrolysis with 4% sulfuric acid at 100°C for 1 h, D-xylose and luteolin with mp 327-328°C were obtained. The site of attachment of the xylose to the aglycone at C<sub>7</sub> was established by means of color reactions and by the absence of a shift of the absorption band in the UV spectrum of the glycoside after the addition of sodium acetate.

On the basis of its composition and the results of quantitative acid hydrolysis, it may be concluded that patuloside is a monoside.

The results of a comparison of  $[M]_D \cdot K_P$  of the glycoside with  $[M]_D \cdot K_P$  of the corresponding phenyl xylosides according to Klyne [3] and the capacity of the substance for being readily hydrolyzed by acid and by emulsin showed that it contains a  $\beta$ -glycosidic bond and the furanose form of the sugar residue.

According to the results obtained, patuloside can be characterized as luteolin 7-O- $\beta$ -D-xylofuranoside.

We may note that xylose is found very rarely in flavone glycosides [4].

LITERATURE CITED

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