

## BRIEF COMMUNICATIONS

### HYDROXYCINNAMIC ACIDS OF *Cichorium intybus*

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We have previously reported the results of an investigation of the hydroxycoumarin composition of the inflorescences of *Cichorium intybus* L. (common chicory) [1]. On continuing a study of the phenolic composition of the epigeal part of this plant, we have obtained several derivatives of hydroxycinnamic acid.

An aqueous ethanolic (60%) extract from chicory collected in the flowering phase was evaporated and treated with chloroform. The aqueous residue was chromatographed on a column of polyamide (water  $\rightarrow$  96% ethanol). The fractions obtained were re-separated on polyamide (96%  $\rightarrow$  water). Six compounds showing color reactions and UV absorption spectra characteristic for hydroxycinnamoyl derivatives were isolated.

Substance (I) was identified as caffeic acid.

On alkaline hydrolysis (0.1 N KOH; 40 min at 99°C), substances (II-V) formed quinic acid, revealed by the barbituric reagent [2] (blue color in visible light and pink in UV light). The aromatic components of substances (II) and (III) proved to be caffeic acid, while that of (IV) was ferulic acid and that of (V) p-coumaric acid. A comparison with authentic samples enabled substances (II-V) to be identified as chlorogenic, neochlorogenic, and 3-feruloyl- and 3-p-coumaroylquinic acids, respectively.

In 2% acetic acid, compound (VI) had  $R_f$  0.52. UV spectrum:  $\lambda_{\max}$  245, (299), 326 nm;  $\lambda_{\max}^{\text{KOH}}$  256, 385 nm. In UV light ( $\approx$  366 nm) it gave a blue fluorescence changing to green in ammonia vapor. Alkaline hydrolysis formed caffeic and tartaric acids. The latter, on treatment with the barbituric reagent on a chromatogram, showed a yellow color in visible light. On the basis of the properties given, (VI) is assumed to be the previously described [3] dicaffeoyltartaric acid.

#### LITERATURE CITED

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