The study of flavonoids and glycosides in the *Digitalis lanata*

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**ABSTRACT** The population of *Digitalis lanata* was studied in hillocks of Pécs-Nagyárpád, the southern part of Transdanubia in Hungary. The qualitative analysis of digitalis-glycosides and flavonoids in the leaves of naturally growing *Digitalis lanata* was carried out. The qualitative analysis was carried out by TLC. The digitalis-glycoside content was smaller in the leaves of naturally growing *Digitalis lanata* than in the leaves of cultivated variations.

**KEY WORDS** *Digitalis lanata* digitalis-glycosides flavonoids TLC

The glycosides can be found in different parts of the plant (root, stem, leaf, fruit, seed, etc.) in small concentration. The glycosides are composed of the hydroxils of sugars and alcohols. The digitalis-glycosides do not dissolve in water, because the big carbohydrogen frame is too hydrofob. The digitalis-glycosides are active optically, because they include asymmetry centres. The steran-frame of the digitalis-glycosides compose brightly fluorescing products with concentrated acids. Flavonoids are more characteristic in flowers, fruits and roots. Flavonoids are the biggest group of the phenol compounds in the plant. The flavonoid-aglycons dissolve in organic solvents. The flavonoids compose a colored complex with metallas. The chromatograms were studied at 365 nm UV light.

**Materials and Methods**

Samples from the population of naturally growing *Digitalis lanata* were collected in Nagyárpád, from the populations of cultivated *Digitalis lanata* in Budakalász and Bácsalmás and from the population of naturally growing *Digitalis ferruginea* in Italy. The basis for comparisons were digoxin, gitoxin and rutin standards.

**Analysis of digitalis-glycosides**

The dehydrated leaves were soaked in distilled water for a night. The ballast was removed with lead-acetate. After filtration and spin-drying, the samples were soaked out in chloroform-ether-ethyl alcohol (50:10:10). 20 microlitre from each sample was applied to the plate. The samples were developed in ethyl-acetate - methanol - water (75:10:7,5). The proving was done with trichloric-acetic acid in the chloroform. After the treatment at 120ºC for 10 minutes, the plate was at 366 nm UV light. The samples were compared with the standards. From the standards serial dilutions were made (10, 40, 70, 100 ng). The samples were developed in ethyl-acetate - methanol - water (4:16:0,4). The chromatograms were treated at 110ºC for 5 minutes, then in hydrochloric acid vapour, for 30 minutes, after it at 110ºC for 5 minutes. It was evaluated at 366 nm UV light too.

**Results and Discussion**

*Digitalis lanata* comprises three genin-glycosides: lanatozide A, B and C. After the splitting of glycose and acethyl groups lanatozide A is transformed into digitoxin, lanatozide B into gitoxin and lanatozide C into digoxin. The lanatozides were in disintegrated condition. At 366 nm UV light, digitoxin fluoresced yellow, gitoxin light blue and digoxin purple. On the chromatogram developed in trichlor-acetic acid, the spots from the samples of *Digitalis lanata* and *Digitalis ferruginea* differed in intensity. The samples of *Digitalis lanata* were stronger.

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References


