

BRIEF COMMUNICATIONS

DERIVATIVES OF SINAPIC ACID IN PLANTS OF THE FAMILY CRUCIFERAE

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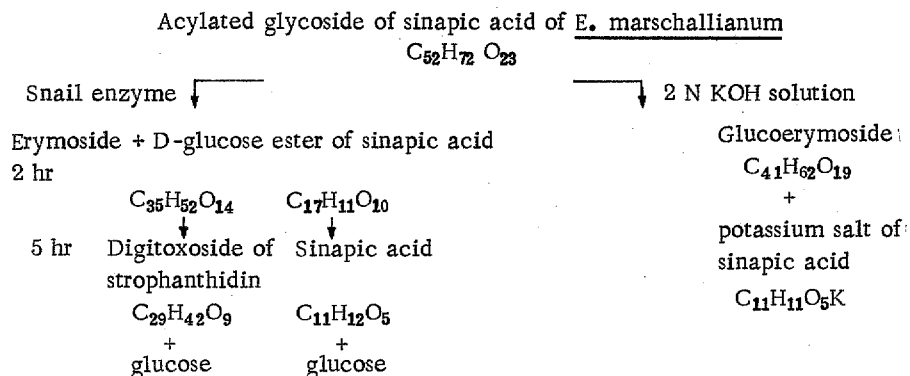
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Reports have recently appeared on the presence in many plants of esters of hydrocinnamic acids with various carbohydrates [1-4].

In plants of the family Cruciferae, in addition to cardiac glycosides and flavonoid compounds a group of substances with a pale blue fluorescence has been found. As a result of the study of these substances it has been established that they are all derivatives of sinapic acid. In all the plants investigated, esters of D-glucose with sinapic acid and complex compounds containing this acid, a steroid aglycone, and a carbohydrate have been found. Compounds acylated with sinapic acid are unstable in acidic and alkaline media and rapidly decompose on heating. They give positive reactions for cardiac glycosides and are decomposed on alkaline hydrolysis into sinapic acid and a cardiac glycoside more polar than the initial complex. When these compounds are treated with enzyme preparations from a snail (*Helix plectotropis*) or a fungus (*Aspergillus oryzae*), stepwise hydrolysis takes place. Steroid glycosides more polar than the initial ones and esters of D-glucose with sinapic acid first appear. The monoses forming monoglycosides, mainly with specific sugars, and free sinapic acid are split off.

Investigations have established that the qualitative composition of the sinapic esters of the glycosides depends mainly on the composition of the cardiac glycosides of the plant studied. The more diverse the composition of the cardiac glycosides, the more variable is the composition of the compounds with sinapic acid. Thus, four glycosides containing sinapic acid have been found in the seeds of *Cheiranthus allionii* hort., two in the herbage and seeds of *Syrenia ucrainica* Klok. and *S. siliculosa* (MB) Andrz., and only one in *Erysimum marschallianum* Andrz., in Bieb.

As an example, we may give the scheme of enzymatic and alkaline hydrolysis of the glycoside of the seeds of *E. marschallianum*.



On the basis of the results obtained, the complex glycoside of the seeds of *E. marschallianum* may be characterized as the sinopyl-1-D-glucosyl-β-D-glucopyranosyl-β-D-digitoxopyranoside of strophanthidin.

The glycosides containing sinapic acid of other plants of the family Cruciferae differ from the compounds given above only in the qualitative and quantitative composition of the monose.

The presence of unstable glycosides acylated with sinapic acid in plants of the family Cruciferae indicates that the cardiac glycosides are contained in them in the form of more complex compounds than has been considered up to the present time.

REFERENCES

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