ISOLATION OF GLUCOALOE-EMODIN FROM CASSIA ACUTIFOLIA DEL.

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We have studied the composition of the anthraglucosides of Cassia acutifolia (Alexandria Senna) collected in 1963 at the Southern Kazakhstan ZOS [Regional Experiment Station] of VILAR [All-Union Scientific Research Institute for Medicinal and Aromatic Plants] with a total content of anthracene derivatives of 0. 85%.

The extraction of the anthraglucoside from the raw material was carried out with methanol, and the solvent was then distilled off in vacuum, the residue being dissolved in 20% ethanol and chromatographed on polyamide. This gave several fractions of anthracene derivatives. From the fraction giving a spot with R_f 0.36 on paper chromatography in the water-acetone-benzene (2:1:4) (lower layer) system we have isolated a crystalline substance of composition $C_{21}H_{20}O_{10}$, mp 219-221° (from water). Acid hydrolysis of the substance gave aloe-emodin and glucose. The IR spectrum of the substance exhibits absorption bands at 1587 cm^{-1}, 1646, 1664, 3350 and 3565 cm^{-1}, and the UV spectrum has maxima at 223, 256, and 412 mμ, i.e., the IR and UV spectra of the substance coincide completely with the spectra of the glucoaloe-emodin which we obtained from the roots of Siberian rhubarb [1]. The melting point of mixtures with glucoaloe-emodin gave no depression of the melting point. Thus, the anthraglucoside isolated from the leaves of Alexandria senna is glucoaloe-emodin.

The investigation of the other fractions of anthracene derivatives of the leaves of Alexandria senna is continuing.

REFERENCE

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DECOMPOSITION OF HERNANDEZINE WITH SODIUM IN LIQUID AMMONIA

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The decomposition of thalsimine [1] with sodium in liquid ammonia has given the phenolic base coclaurine, the formation of which showed that the reductive decomposition of the ether bonds in thalsimine is accompanied by the hydrogenolysis of the methoxyl group at C_8 [2].

Thalsimine differs from hernandezine [3, 4] by the presence of a double bond at C_1-N. According to information in the literature, the decomposition of hernandezine with sodium and potassium in liquid ammonia has given only a bimolecular phenol. However, the melting point and the results of elementary analysis given by Padilla and Herron [4] for the phenol obtained may also relate to N-methyl-coclaurine (I).

We have decomposed hernandezine (II) with sodium in liquid ammonia. Exhaustive methylation of the mixture of phenolic bases in an alkaline medium led to the methiodide of O-methylarmepavine [5]. Consequently, in the reductive decomposition of hernandezine both ether bridges are also broken with the formation of monomolecular compounds.

The mixture of phenolic bases isolated by the repeated decomposition of hernandezine was separated in accordance with their basicities [6]. The fraction with pH 10 gave a crystalline base with mp 138-139° (decomp, methanol), $[\alpha]_D^{23}$ +90.6° (c 0.87; alcohol), +73° (c 2.6; chloroform); M 304 (Rast). All the properties mentioned are similar to those of N-methylcoclaurine.

The base obtained in the decomposition of hernandezine was converted into the methiodide, which was ethylated with ethyl iodide in the presence of sodium ethoxide. When the methiodide of the O-ethyl derivative was treated with ethanolamine, a tertiary base was isolated [7]; this was oxidized with potassium permanganate in acetone solution at 0-5°, giving 1-oxo-2-methyl-6-methoxy-7-ethoxytetrahydroisoquinoline (III) and p-ethoxybenzoic acid, which were identified by the mixed-melting-point test with authentic samples. Consequently, the reductive decomposition of hernandezine with sodium and liquid ammonia takes place with the rupture of both oxygen bridges and is accompanied by the hydrogenolysis of the methoxy group at C_8, which leads to the formation of N-methylcoclaurine.