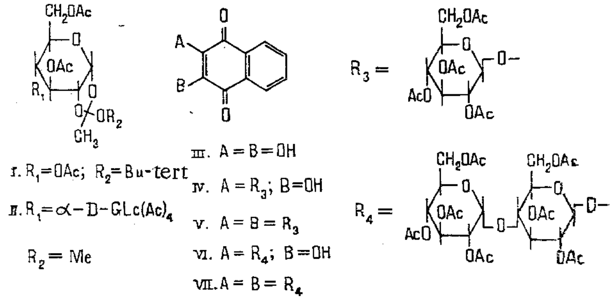

3-Hydroxy-2-(tetra-O-acetyl-β-D-glucopyranosyloxy)-1,4-naphthoquinone (IV), $[\alpha]_D^{20}$ −75.7° (c 1; $CHCl_3$).

2,3-Bis(tetra-O-acetyl-β-D-glucopyranosyloxy)-1,4-naphthquinone (V), $[\alpha]_D^{20}$ −90.7° (c 1; $CHCl_3$).

2-[Tri-O-acetyl-4'-O-(tetra-O-acetyl-α-D-glucopyranosyl)-β-D-glucopyranosyloxy]-3-hydroxy-1,4-naphthoquinone (VI), $[\alpha]_D^{20}$ +80.0° (c 1; $CHCl_3$).

2,3-Bis[tri-O-acetyl-4'-O-(tetra-O-acetyl-α-D-glucopyranosyl)-β-D-glucopyranosyloxy]-1,4-naphthoquinone (VII), $[\alpha]_D^{20}$ +24.0° (c 1; $CHCl_3$).

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INTEGRAL INTENSITIES OF THE IR BANDS OF THE SKELETAL VIBRATIONS OF THE HETEROAROMATIC RINGS OF QUINAZOLINE ALKALOIDS IN THE 1480-1630 cm^{-1} REGION

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We have previously established that the total integral intensity ($\Sigma A \cdot 10^4$, liter·mole^{-1}·cm^{-2}) of the skeletal ν (C=C) bonds of the aporphine and furoquinoline alkaloids possess a selective sensitivity to the electronic interaction of substituents with the nucleus [1, 2].

With the aim of a further study of the specific features of the interaction of the constituents with the π-electrons of the heteroaromatic system, we have measured ΣA values of a number of quinazoline alkaloids. The results obtained are presented in Table 1.

The decrease in ΣA on passing from deoxypeganine (DOP) to peganine (III) is connected with the basicity of the N_1 nitrogen atom.

In deoxyvasicinone (DOV), the integral intensity is almost 1.5 times less than in DOP, which can be explained by the acceptor influence of the carbonyl group on the aromatic system. The weakening of the donor nature of the N_1 nitrogen atom, which forms an intramolecular H bond with the proton of the hydroxy group, leads to a considerable decrease in ΣA for vasicinone (ΣA = 6.50) as compared with DOP (ΣA = 12.90), and DOV (ΣA = 9.20).

It must be mentioned that the value of ΣA in 7-OCH_3-DOV is considerably higher than in the 6-OCH_3 and 8-OCH_3 derivatives. As in the case of substituted quinolines [3-6], the high value of ΣA for 7-OCH_3-DOV is due to the effect of the direct conjugation of the OCH_3 substituent (+C) with the carbonyl group (−C).

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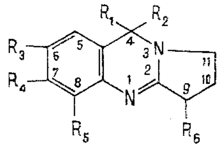
TABLE 1. Values of ΣA of the Absorption bands of the Quinazoline Alkaloids in the 1480-1630 cm^{-1} Region



Compound	ν_1, cm^{-1}	$A_1 \cdot 10^4$, liter · $mole^{-1}$ · cm^{-2}	ν_2, cm^{-1}	$A_2 \cdot 10^4$, liter · $mole^{-1}$ · cm^{-2}	ν_3, cm^{-1}	$A_3 \cdot 10^4$, liter · $mole^{-1}$ · cm^{-2}	$\Sigma A = A_1 + A_2 + A_3$
I. Deoxypeganine (DOP) $R_1=R_2=R_3=R_4==R_5=R_6=H$	1570	4,50	1593	3,60	1620	4,80	12,90
II. DOP hydrochloride	—	—	1570 1595	4,97	1620	4,00	9,00
III. Peganine $R_1=R_2=R_3=R_4=R_5=H$; $R_6=OH$	1583	1,50	1595	2,50	1633	4,68	7,70
IV. Deoxyvasicinone (DOV) $R_1+R_2=O$; $R_3=R_4=R_5=R_6=H$	1560	2,00	—	—	1610 1625	7,20	9,20
V. Vasicinone $R_1+R_2=O$; $R_6=OH$; $R_3=R_4=R_5=H$	—	—	1610	2,46	1620	4,00	6,50
VI. 7-OCH_3-DOV $R_1+R_2=O$; $R_3=R_5=R_6=H$; $R_4=OCH_3$	1560	2,60	1608	7,90	—	—	10,30
VII. 6-OCH_3-DOV $R_1+R_2=O$; $R_4=R_5=R_6=H$; $R_3=-OCH_3$	—	—	—	—	1620 1609	5,00	5,00
VIII. 8-OCH_3-DOV $R_1+R_2=O$; $R_4=R_5=R_6=H$; $R_5=-OCH_3$	1570	2,55	1590	4,40	—	—	7,00

An analysis of the figures for the integral intensities given in the Table shows an influence of various constituents on the π-electronic system of the quinazoline alkaloids.

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