SYNTHESIS OF SOME NEW ANALOGS OF KINETIN

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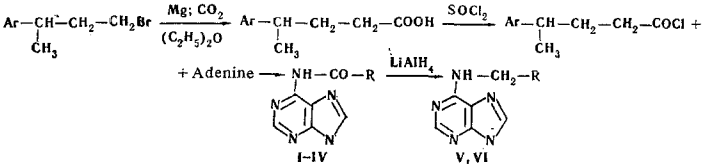
Among the synthetic analogs of kinetin which accelerate the division of plant cells, 6-benzylaminopurine and its homologs with different numbers of carbon atoms in the side chain deserve particular attention [1, 2]. It appeared of interest to study the influence of the position of the phenyl radical in the chain and that of some substituents in the aromatic nucleus on the physiological activity of the products. Our interest in these compounds is explained by the fact that some plant growth substances and their antagonists exhibit well-defined antitumoral activity [3]. To obtain some new analogs of kinetin we used as the starting materials 3-aryl-1-bromobutanes, which are readily available at the present time [4]. The synthesis was carried out by the following route:



I, R = $C_6H_5CH(CH_3)CH_2CH_2$, mp 217° C, yield 60%. Found, %: C 65.23; H 5.79; N 23.89. Calculated for $C_{16}H_{17}N_5O$, %: C 65.1; H 5.80; N 23.72.

II, R = p-$CH_3C_6H_4CH(CH_3)CH_2CH_2$, mp 190–193° C, yield 58%. Found, %: C 65.82; H 6.00; N 22.61. Calculated for $C_{17}H_{19}N_5O$, %: C 66.00; H 6.14; N 22.64.

III, R = p-$C_2H_5C_6H_4CH(CH_3)CH_2CH_2$, mp 177–179° C, yield 54%. Found, %: C 66.70; H 6.50; N 21.76. Calculated for $C_{18}H_{21}N_5O$, %: C 66.87; H 6.54; N 21.66.

IV, R = p-$(CH_3)_2C_6H_3CH(CH_3)CH_2CH_2$ [sic], mp 168–170° C, yield 56%. Found, %: C 66.80; H 6.42; N 21.82. Calculated for $C_{18}H_{21}N_5O$, %: C 66.87; H 6.54; N 21.66.

V, R = $C_6H_5CH(CH_3)CH_2CH_2$, mp 150–153° C, yield 58%. Found, %: C 68.32; H 6.88; N 25.00. Calculated for $C_{16}H_{19}N_5$, %: C 68.29; H 6.80; N 24.89.

VI, R = p-$CH_3C_6H_4CH(CH_3)CH_2CH_2$, mp 113–116° C, yield 52%. Found, %: C 69.20; H 6.97; N 23.69. Calculated for $C_{17}H_{21}N_5$, %: C 69.13; H 7.17; N 23.72.

A solution of adenine and an acid chloride in a molar ratio of 1 : 2 in p-xylene was boiled in the presence of a small excess of pyridine for 12 hr. The 6-acylaminopurines (I and II) obtained in this way were reduced with $LiAlH_4$ in tetrahydrofuran to the corresponding 6-aralkylaminopurines (V and VI).

The IR spectra of compounds I–IV have the bands of an amide C=O group at 1697, 1691, 1696, and 1695 cm^{-1}, respectively. In the reduced products (V and VI), the bands of a C=O group are absent, as was to be expected.

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