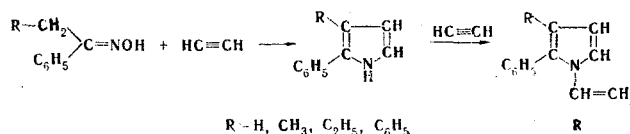


NEW SYNTHESIS OF 1-VINYL-2-ARYLPYRROLES

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We have found that the recently discovered reaction of acetylene with ketoximes, which gives 1-vinyl-2,3-dialkylpyrroles (I), can be extended to the oximes of alkyl aryl ketones, which in the presence of excess acetylene give 1-vinyl-3-alkyl-2-arylpyrroles (I) in 64-76% yields. If the reaction is carried out with insufficient acetylene, the process can be interrupted at the step involving the production of the 2-arylpyrrole, and the reaction with two molecules of acetylene consequently proceeds in a stepwise manner. The enolizability of the starting ketones and the CH acidity of the methylene group are not decisive factors, inasmuch as replacement of hydrogen by an alkyl or phenyl (R = H) group does not lead to substantial changes in the yield of I. Thus 1-vinyl-2-phenylpyrrole, with bp 125° (5.5 mm), n_D^{20} 1.6110, and d_4^{20} 1.0443, was obtained in 70.5% yield from acetophenone oxime. The following compounds were similarly synthesized: 1-vinyl-2-phenyl-3-methylpyrrole [76.3% yield, bp 110° (1.5 mm), n_D^{20} 1.5960, and d_4^{20} 1.0509], 1-vinyl-2-phenyl-3-ethylpyrrole [64.2% yield, bp 135° (5 mm), n_D^{20} 1.5910, and d_4^{20} 1.0192], and 1-vinyl-2,3-diphenylpyrrole (71.6% yield, mp 125°).



The results of elementary analyses for C, H, and N were in agreement with the calculated values. The IR spectra contain characteristic frequencies at 1640-1644, 1602, and 1500 cm^{-1} corresponding to the vibrations of the vinyl group and the pyrrole ring. The PMR spectra contain the characteristic signals (6.08-6.65 ppm) of the vinyl group, of pyrrole ring protons [2-H at 5.92 ppm and 3-H at 6.92 ppm ($J = 3$ Hz)], and of the protons of the phenyl group at 7.18 ppm.

The structure of pyrroles I is also confirmed by the conversion of 1-vinyl-2-phenylpyrrole to the known 1-ethyl-2-phenylpyrrole by hydrogenation on Raney nickel.

LITERATURE CITED

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