

## SYNTHESIS OF PYRAZOLO[3,4-d]PYRIDAZINE AND IMIDAZO[4,5-d]PYRIDAZINE DERIVATIVES

Kenji Kaji, Hiromu Nagashima, Yusho Ohta, and Junko Yoshida  
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Gifu College of Pharmacy

Mitahora 492-36, Gifu

Novel synthesis of 1,3,5-trisubstituted pyrazolo[3,4-d]pyridazin-4(5H)-ones by photolysis is reported.

5-(Benzylidene-1'-methylhydrazino)-4-chloro-2-methyl-3(2H)-pyridazinone underwent irradiation ( in benzene, 100 w, hp ) to yield 1,5-dimethyl-3-phenyl-pyrazolo[3,4-d]pyridazin-4(5H)-one ( mp 141-142°, 85.5 % in yield, ir,  $\text{cm}^{-1}$ : 1645 ( CON $\angle$  ), nmr ( in  $\text{CDCl}_3$  )  $\tau$  : 1.40-1.70( 2H, m, arom. ortho-H ), 1.95( 1H, s, C<sup>7</sup>-H ), 2.35-2.60( 3H, m, arom. meta- and para-H ), 5.99( 3H, s, CH<sub>3</sub> ), 6.15( 3H, s, CH<sub>3</sub> ) ). The photolysis was successfully applied to the formation of 1-benzyl-5-methyl-( mp 136-137°, 84.8 % ), 1-methyl-5-phenyl-( mp 199-200°, 75.5 % ), 1-benzyl-5-phenyl-( mp 175-176°, 79.1 % ), 1-methyl-5-benzyl-( mp 138-139°, 87.8 % ), 1,5-dibenzyl-3-phenyl-pyrazolo[3,4-d]pyridazin-4(5H)-one ( mp 146-147°, 86.7 % ). The key intermediates, 5-(benzylidene-1'-alkylhydrazino)-4-chloro-2-substituted 3(2H)-pyridazinones, were smoothly derived from the respective 2-substituted 4,5-dichloro-3(2H)-pyridazinones, by treatment with hydrazine, benzaldehyde, and the corresponding alkyl halides successively.

Synthesis and physico-chemical property of some imidazo[4,5-d]pyridazine derivatives are also discussed, to compare with those of the pyrazolo[3,4-d]pyridazine described above.