The Photochemistry of 4-Pyrimidones in Amine solution

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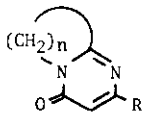
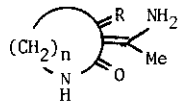
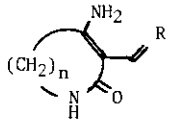
Photochemistry of monocyclic and bicyclic 4-pyrimidones in amine solution was investigated. We reported first the photolysis of fused 4-pyrimidones. Irradiation of a fused 4-pyrimidones(9) in amine solution ($MeNH_2$ or $EtNH_2$) afforded medium-ring lactams (10) or (11). Photolysis of fused 4-pyrimidones (13) in methylamine-ether (1:5) solution gave medium-ring lactams (14). When these medium-ring lactams (10, 11) and (14) were treated with an acidic methanol solution (11% water and 1% acetic acid), (12) and (15) were obtained, respectively. On the other hand, Irradiation of pyrimidone(16) in methylamine solution afforded an amidine (17) and a di-imine (18). The fraction of (17) increases with increasing methylamine concentration. Photolysis of (22) in ethylamine solution gave (23) which was treated with an acidic methanol solution (11% water and 1% acetic acid) to afford 4-pyrimidones (24).



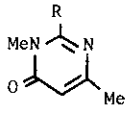
(9) R=Me n=4-7
(13) R=H n=4-5



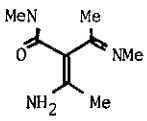
(10) R=NMe n=4-5
(11) R=NEt n=4-7
(12) R=O n=4-7



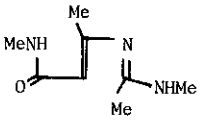
(14) R=NMe n=4-5
(15) R=O n=4-5



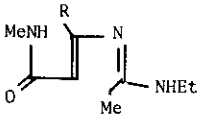
(16) R=Me
(19) R=Et or Pr



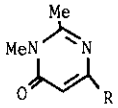
(18)



(17)



(20)
R=Et or Pr



(21)
R=Et or Pr