

RING TRANSFORMATION OF URACIL DERIVATIVES WITH NUCLEOPHILES

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Our previous works have demonstrated that the reaction of uracil derivatives with various 1,3-ambident nucleophiles causes facile intermolecular transfragment reactions to pyrimidines or pyridines. During our investigation on the reactivities of uracil derivatives containing an electron-withdrawing group such as nitro, cyano, and carbamoyl group at the 5-position toward various amines, we have found the new type of pyrimidine-to-pyrimidine ring transformations.

Reaction of 1,3-dimethyl-5-nitro-uracil (**1a**; $R^1 = \text{Me}$) with butylamine in DMF at 120°C afforded 1-butyl-3-methyl-5-nitro-uracil (**2a**; $R^2 = \text{Bu}$) in 27% yield. 3-Methyl-5-nitro-1-(p-nitrophenyl)uracil (**1b**; $R^1 = p\text{-NO}_2\text{C}_6\text{H}_4$) was smoothly converted into **2a** in 59% yield by treatment with butylamine. Introduction of p-nitrophenyl group at the N_1 -position accelerated the conversion of **1b** into **2a**. Analogous treatment of **1b** with primary amines such as methylamine, cyclohexylamine, ethanolamine, glucosamine gave the corresponding products (**2**). These reactions involve a direct displacement of the N_1 -portion by amines employed.

Treatment of 5-cyano-3-methyl-1-phenyluracil (**3a**; $X = \text{CN}$) with methylamine led to the formation of 6-amino-1,3-dimethyl-5-methyliminomethyluracil (**4**). Reaction of 5-carbamoyl-3-methyl-1-phenyluracil (**3b**; $X = \text{CONH}_2$) with methylamine resulted in the formation of N_1 -exchanged 5-carbamoyl-1,3-dimethyluracil. While 5-carbamoyl-1-methyl-3-phenyluracil was converted into 5-(N-phenylcarbamoyl)-1-methyluracil by the treatment with methylamine.

