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PHOTOCHEMICAL ADDITION OF 6-CYANO-1,3-DIMETHYLURACIL TO SUBSTITUTED ACETYLENES AND OLEFINS

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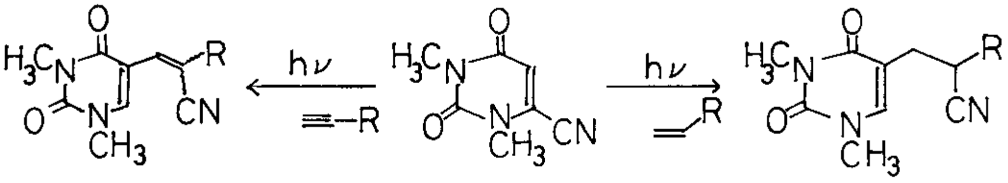
Photochemical reactions of 6-substituted 1,3-dimethyluracils in the presence of alkynes and alkenes have been investigated. Photolysis ($\lambda > 290$ nm) of 6-cyano-1,3-dimethyluracil (**1**) with diphenylacetylene or methylphenylacetylene in acetonitrile gave the corresponding cyclobutene-type adduct in a regiospecific fashion. A similar type of cycloaddition has been observed in the photoreaction of 6-carbomethoxy-1,3-dimethyluracil with methylphenylacetylene.

In contrast, photolysis of **1** in the presence of alkynes or alkenes gave rise to the formation of a novel 5-substituted uracil derivative. For example, irradiation of **1** with 1-hexyne in acetonitrile gave 5-(2-cyano-1-hexenyl)-1,3-dimethyluracil in high yield.



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This novel photoreaction involves migration of cyano group and provides a convenient, useful method for forming carbon-carbon bonds at the C-5 position of uracil and uridine derivatives.