Reaction of 4*H*-Imidazole-3-oxides with Acrylonitrile

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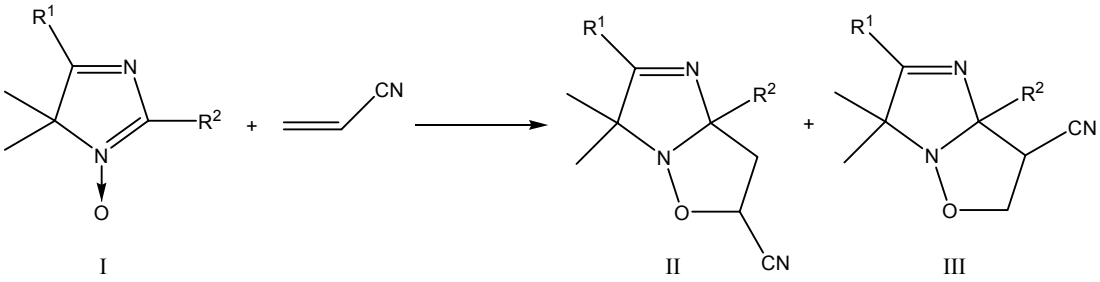
It has been shown that 2-methoxy- and 2-unsubstituted- 5-phenyl-4*H*-imidazole 3-oxides can react with a number of dipolarophiles [1]. We have found that both 2-substituted and 2-unsubstituted 4*H*-imidazole 3-oxides **I** can react with acrylonitrile to form 3,6,7,7a-tetrahydro-imidazo[1,2-b]isoxazole carbonitriles **II** and **III**. The reactivity of 4*H*-imidazole-3-oxides in the 1,3-dipolar cycloaddition reaction depends upon substituents R^1 and R^2 in the heterocycle.



I II III

R^1 = Me, CN, $NAlk_2$; R^2 = H, Me, Et, Ph.

The ratio of the isomers **II** and **III** is strongly affected by the character of substituent R^1. 5-Cyano- and 5-methyl- 4*H*-imidazole 3-oxides give mainly or exclusively 3,6,7,7a-tetrahydro-imidazo[1,2-*b*]isoxazole-6-carbonitriles **II**, whereas 5-dialkykamino-derivatives give corresponding 7-carbonitrile isomers **III** as a main products. The structures of all products have been proved by various physical methods.

1. S. M. Bakunova, I. A. Kirilyuk, I. A.Grigor'ev.// Russ. Chem. Bull., Int. Ed., 2001, **50**, 5, 882-889.

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