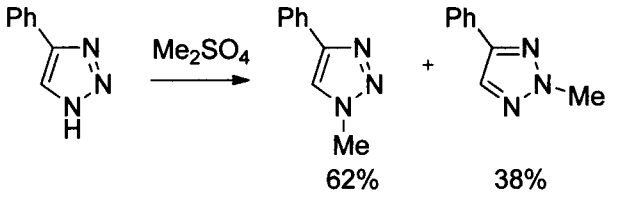
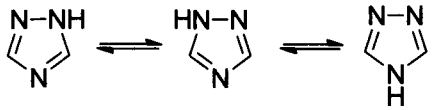
Additionally, substituents on the triazole ring will direct the orientation of alkylation. The 4-phenyl-1H-1,2,3-triazole tends to give the 1-methyl and 2-methyl isomers in 62% and 38% when treated with dimethyl sulfate. The 1-methyl-5-phenyl derivative was not found due to steric effects.[13]

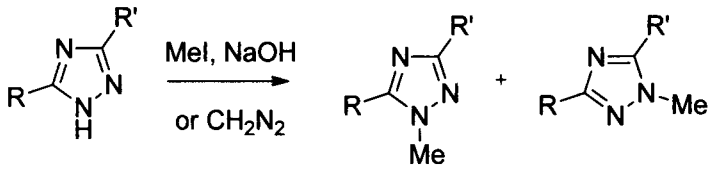


Alkylation of 1,2,4-triazole

The tautomerism of 1,2,4-triazole showed as below:



The alkylation of 1,2,4-triazole prefers to give the N-1 substitued product rather than the N-4 substituted product. However, the alkylation product of either N-1 or N-2 is difficult to predict when triazole has 3- or 5-substituents. Generally, the ratio of both products depends on the properties of the alkylating agent.[14]



An example of alkylation of a 3-substituted triazole is shown below: