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PII: S0040-4039(13)01587-6
DOI: http://dx.doi.org/10.1016/j.tetlet.2013.09.033
Reference: TETL 43533

To appear in: *Tetrahedron Letters*

Received Date: 30 July 2013
Revised Date: 4 September 2013
Accepted Date: 11 September 2013

Please cite this article as: Sandeep, C., Padmashali, B., Kulkarni, R.S., Efficient synthesis of indolizines and new imidazo[1,2-a]pyridines via the expected cyclization of aromatic cycloimmonium ylides with electron deficient alkynes and ethyl cyanoformate, *Tetrahedron Letters* (2013), doi: http://dx.doi.org/10.1016/j.tetlet.2013.09.033

Efficient synthesis of indolizines and new imidazo[1,2-a]pyridines via the expected cyclization of aromatic cycloimmonium ylides with electron deficient alkynes and ethyl cyanoformate

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A B S T R A C T

Aromatic cycloimmonium ylides underwent smooth cyclization with electron deficient alkynes in presence of anhydrous K_2CO_3 in DMF solvent at room temperature to afford substituted indolizines. Ylides have also undergone expected cyclization with ethyl cyanoformate to produce imidazo[1,2-a]pyridines. The structures of these newly synthesized compounds have been confirmed by spectroscopic techniques and X-ray diffraction studies.

Keywords:

Indolizines

Cycloaddition

Imidazo[1,2-a]pyridines

Alkynes

Ethylcyanoformate.

Indolizines are aromatic organic compounds containing condensed five and six- membered rings with bridging nitrogen. They are isoelectronic with indole and represent a group of heterocyclic compounds structurally related to purines. Indolizine skeletons with different degrees of unsaturation are present in a wide variety of natural and unnatural azacyclic compounds. Most of the naturally occurring indolizines have been isolated from species of genus dendrobates (poison-arrow frogs); monomorium (ants); dendrobium (orchids); tylophora and the leguminosae family (plants). Indolizine alkaloids display broad spectrum of biological activities.[1]. Polyhydroxylated indolizine alkaloids are excellent inhibitors of biologically important path ways. These include the binding and processing of glycoproteins, potent glycosidase inhibitor activities, activity against AIDS and some carcinogenic cells as well as against other important pathologies.[2,3.] Indolizines are the simplest pyrroloazines, formally obtained by the condensation of a pyridine and a pyrrole ring, being isomeric to indole. This relatively simple indolizine skeleton offers the possibility of fine tuning certain properties by varying the number and type of substituents.[4,6.] Such an example is the synthesis of highly specific chemosensors obtained by linking 7-substituted indolizines to a cyclodextrine moiety.[9.] Several synthetic methods for obtaining indolizines are known, one of