SYNTHESIS OF PYRAZOLO[1,5-*a*]PYRIDINES CONTAINING PHOSPHONATE MOIETY

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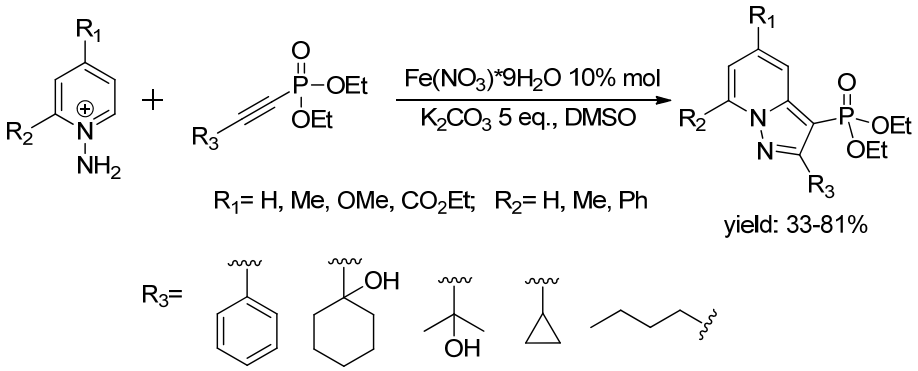
Substituted pyrazolo[1,5-*a*]pyridines possess wide range of biological activity. For example, nonselective PDE3,4 inhibitor Ibudilast have been marketed in Asia for 30 years as anti-infamatory drug. [3+2] cycloaddition reaction of EWG-substituted alkynes and pyridinium-*N*-imines is a convenient approach to pyrazolo[1,5-*a*]pyridines. Recently, phosphonate-substituted pyrazolopyridines were obtained by reaction perfluroalkyl substituted ethynylphosphonates with *N*-aminopyridinium salts [1].

In this work, we apply this method to aryl and alkyl substituted ethynylphosphonates.



As a result, it was found that in the presence of $Fe(NO_3)_3 \times 9H_2O$ a higher yield could be achieved. Best results are obtained using DMSO as solvent and potassium carbonate as the base. The method allows to obtain target compounds with good yield for aryl derivatives and moderate yield in the case of alkyl substituents.

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[1] Chen J., Qi H., Dong H., Jing H., Jie C., Weimin H., Hongmei D., Min S., Hui Z., Weiguo C., Synthesis 2018; 50(18): 3731-3737.