An efficient synthesis of 2-Methoxy-3-(1H-1,2,3-triazol-1-yl)methyl)quinoxaline

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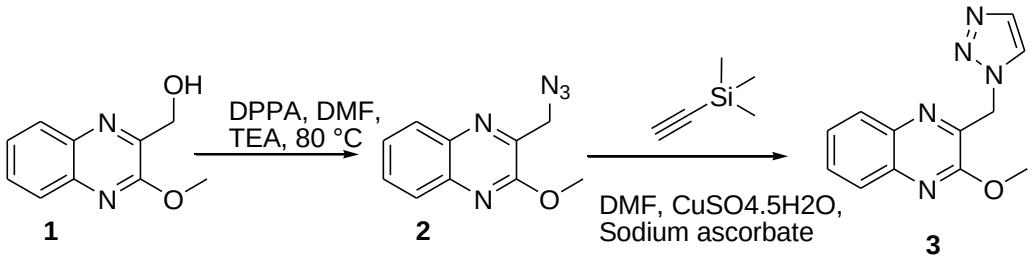
Abstract

A new method was developed to synthesize 2-Methoxy-3-(1H-1,2,3-triazol-1-yl)methyl)quinoxaline The compounds were synthesized were characterized by spectral data.

Introduction

Quinoxaline derivatives are an important class of heterocyclic compounds, where N replaces some carbon atoms in the ring. Quinoxaline molecular formula is $C_8H_6N_2$ and is formed by two aromatic rings, benzene and pyrazine. It is rare in natural state, but their synthesis is easy to perform[1]. Slight modification in its structure is possible to obtain a wide variety of compounds with different broad range of biological activities and pharmacological applications[2] such as bactericides and insecticides[3], antibacterial[4-7] activities. 1*H*-1,2,3-Triazole molecules play a vital role in pharmaceuticals and agrochemicals.[8] The triazole moiety is very important in organic chemistry due to its broad range of applications in biomedicinal, biochemical, and material sciences.[9] The chemistry of the compounds containing this moiety underwent substantial growth over the past decades [10]. These compounds are widely used in industrial applications such as dyes, photographic materials, photostabilizers, agrochemicals, and corrosion inhibitors (copper alloys)[11].

Recent literature studies[12,13] demonstrated that 1*H*-1,2,3-triazole ring containing heterocycles was showing superior carbonic anhydrase inhibitors. In view of the importance of Triazole and Quinoxalines, we have synthesized title compounds.



2-(Azidomethyl)-3-methoxyquinoxaline (2): To a stirred solution (2-methoxyquinoxalin-3-yl)methanol (**2**) (1 eq.) in DMF (5 Vol) were added DPPA (1.5 eq.), TEA (3 eq.) and stirred the reaction at 80 °C for 4 h. After completion of reaction (monitored by TLC), poured the reaction mixture into ice cold water and

extracted from EtOAc, The extract was washed with water, brine solution, dried over anhy. Na_2SO_4 and evaporated the solvent to afford crude product. Crude product was purified by column chromatography; required product was eluted with 20% EtOAc in Pet ether to afford the product**.**

2-Methoxy-3-(1H-1,2,3-triazol-1-yl)methyl)quinoxaline (3): To a stirred solution 2-(azidomethyl)-3-methoxyquinoxaline (**3**) (1 eq.) in MeOH/water (1:1 ratio, 5 Vol) were added trimethylsilylacetylene (1.5 eq.), $CuSO_4.5H_2O$ (0.2 eq.), sodium ascorbate (0.4 eq.) and stirred the reaction at room temperature for 12 h. After addition of aqueous ammonium chloride solution, the mixture was extracted with EtOAc (**30 mL**). The combined organic phase was washed with water, brine solution, dried over anhy. Na_2SO_4 and evaporated the solvent to afford crude product. Pure product was isolated by column chromatography using 50% EtOAc in Pet ether as eluent to afford the product**.**

Analytical Data:

2-(azidomethyl)-3-methoxyquinoxaline (**3**)**.** white solid, 83%, m.p.128-131 °C. ^{1}H NMR (DMSO-d_6), 400 MHz: δ =8.11 (d, 2H, J=7.8 Hz), 7.91 (t, 2H), 3.80 (S, 3H), 2.81 (S, 2H); Mass= 215 $[M+H]^+$

2-methoxy-3-(1H-1,2,3-triazol-1-yl)methyl) quinoxaline **(4)** : white solid, 84%, m.p.140-142 °C. ^{1}H NMR (DMSO-d_6), 400 MHz: δ =8.10 (d, 2H, *J*=8.0 Hz), 7.90 (t, 2H), 7.71 (S, 1H), 5.02 (S,2H), 3.81 (S, 3H), 2.21 (S,3H); Mass= 255.9 $[M+H]^+$

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