IICC 2021 International Industrial Chemistry Conference

Virtual

1st International Industrial Chemistry Conference

26-28th February 2021

Synthesis of MBH Adduct based Hydroxamic Acids derivatives

Riffat Ullah[1*], Shafiullah Khan[1*], Hamid Ullah[2],Ghulam Mustafa[2]

Hydroxmic acid and related structure gained valuable attention with reference to their structural complexity (polyfuntional nature)and potent biological activities. Upon hydrolysis,Hydroxamic acid can be converted into carboxylic acid. This versatile functional group carry chelating propertis,which make them able to work as bidentate ligands toward metal ions such as Fe(II),Cu (II) and others [1].

Hydroxamic acid display diserse pattern of biological activities, including antibacterial,antifungal,antitumr,anti-inflamtry,antiastemic,psychotropic,activities[2].

Since literature suggest that Morita baylis Hillman (MBH) adduct are highly functinalized and easily accessible synthetic precursors [3],therfore,our research work begin with the preparation of MBH adducts.

In the current research formation of five MBH adducts were prepared from aliphatic and aromatic aldehyde by treatment with ethyl acrylate, through a well-known MBH reaction. The pure MBH products were employed as synthetic precursors and thus converted into their respective four Hydroxamic acids with an exception that an aliphatic MBH adduct have not reacted. Chromatographic purification and then relevant spectral studies suggested their structural formulas. Thus a total of four Hydroxamic acids were prepared in good yield. The study inferred that aliphatic aldehyde based adduct resist to oximation however the aromatic aldehyde based adduct proved as good precursors for Hydroxamic acid formation.

Thus, initially a range of MBH adducts (1-5) were prepared in good yield from both aliphatic and aromatic aldehyde by treating the aldehydes with ethyl acrylate in presence of 1,4-diazabicyclo [2.2.2] octane (DABCO) at 25 oC. The pure product obtained after chromatographic purification were treated with Hydroxylamine Hydrochloride in MeOH and few drops of pyridine and thus achieved a series of Hydroxamic acid (7-10) in good yield with purity.The yield is for the pure one and purity was acquired through column chromatography. It is also to point out that the aliphatic adduct was resistant to conversion in Hydroxamic acid in the given condition. The adducts and their respective Hydroxamic acids were analyzed through physical characteristics, TLC observation and spectral studies.

this simple strategy allowed us in preparation of interesting Hydroxamic acid derivatives. Future research in the current work envision preparation of more Hydroxamic acid derivatives and evaluating biological potency of the prepared and upcoming Hydroxamic acid derivatives. the study also proposes utilization of the synthesized Hydroxamic acid into transition metal complex preparation.

1.Arora R,Kakkar R.*International review of biophysical chemistry,2012,3,12-31*.

2.Ahmed E,Fazary,Khalil M,Fahmy A,tantawy *A.journal of islamic Academy of Sciences*,2001,14,109-116.

3.Ullah H,Ferreira AV,Bendassolli JA,Rodrigo MT,Formiga ALB,Coelho F.*Synthesis*,2015,47,113-123.