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Efficient route to synthesize Triazoles using copper on carbon catalyst via click chemistry

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Abstract : One of the most popular reactions within the click chemistry concept is the azide alkyne Huisgen cycloaddition using a Copper (Cu) catalyst at room temperature. Reactions for the synthesis of triazoles have been carried out by using 2 eq. of an alkyne/allene, copper sulfate and sodium ascorbate. In situ reduction of copper(II) salts such as CuSO₄•5H₂O with sodium ascorbate in aqueous alcoholic solvents allows the formation of 1,4-triazoles at room temperature in high yield, with < 2 mol % catalyst loading. In order to attain more atom economy and lower amount of hazardous solvents and other chemicals, the reaction is tried with copper nitrate on carbon. Reaction can be carried out at much lower equivalent of reagents and catalysts because of the spreading of copper salt on to the carbon surface.

Key words : Click Chemistry, Copper on Carbon, Cicerarietinum.

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