CONSTRUCTION OF FIVE-MEMBERED HETEROCYCLES USING CALCIUM CARBIDE

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Abstract. Calcium carbide is a multifunctional reagent for organic synthesis. Calcium carbide is an easy-to-dose solid acetylene source, which has been applied in a wide variety of chemical transformations [1]. Using calcium carbide as a surrogate of acetylene, a range of vinyl derivatives, substituted alkynes, triazoles, pyrroles, pyrazoles, and other heterocyclic compounds was successfully synthesized [1-3].

In our research calcium carbide was applied for the construction of pyrrole and triazole cycles. An interaction of functionalized azides and calcium carbide led us to synthesize triazoles 1a-c (reaction A). Reacting with cyclic oximes, calcium carbide transformed to vinylpyrroles 2a-d, included into bi- or tricyclic systems (reaction B).

\[ \text{CaC}_2 + \text{H}_2\text{O}/\text{D}_2\text{O}, 1,4-\text{dioxane} \rightarrow \text{CaC}_2 + \text{H}_2\text{O}, \text{tBuOK}, \text{DMSO} \]

References
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