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Preyssler-type heteropoly acid: A new, mild and efficient catalyst for protection of carbonyl compounds

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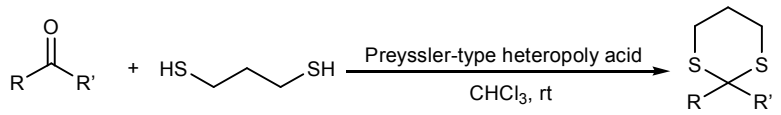
The protection of carbonyl compounds as dithioacetals is an important sequence in multi step preparation of many important organic compounds including multifunctional complex molecules [1].

Moreover, the electrophilic properties of carbonyl group in aldehydes and ketones can be a good choice to be attacked by a nucleophile at the site. Thus, one of the most popular methods for protection of carbonyl groups is to convert them into their corresponding dithioacetals.[2]

There are many methods in the literature for the protection of carbonyl compounds as dithioacetals using various catalysts or stoichiometric reagents [2]. However, most of these procedures have some restrictions such as low yields of the products, long reaction times, harsh reaction conditions, difficulties in work-up and the requirement for an inert atmosphere. Therefore, the search for alternative methods that can overcome these drawbacks is desirable.

On the other hand, precise control of the acidity in a small-scale reaction with usual corrosive any strong acid is extremely difficult. Considering the reversible nature of some processes in organic syntheses, low yield in reaction with pervious usual strong liquid acid is expected. So Preyssler-type heteropoly acid ($H_{14}NaP_5W_{30}O_{110}$) has been introduced as an efficient alternative. The advantages of Preyssler acid as a solid acid catalyst may include large number of balanced protons, strong acidity, high hydrothermal stability, and wide pH range stability in solution [3].

In this work, we wish to report a simple and easy method for chemoselective thioacetalization of various aromatic and aliphatic aldehydes and ketones using Preyssler-type heteropoly acid as a new and efficient catalyst.



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