

Fétizon's reagent: Silver carbonate on celite

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This feature focuses on a reagent chosen by a postgraduate, highlighting the uses and preparation of the reagent in current research.

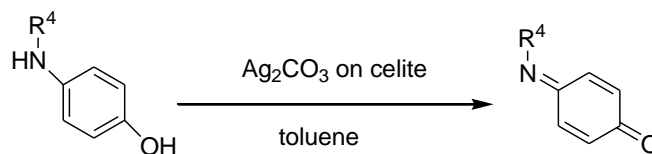
Introduction

Silver carbonate was prepared from aqueous silver nitrate and sodium bicarbonate is able to oxidize some alcohols in refluxing benzene under neutral conditions [1]. The preparation of the resulting active silver carbonate involved time-consuming filtering and washing steps. Fétizon et al. [2] showed that when silver carbonate is generated aqueous silver nitrate and sodium carbonate (or potassium bicarbonate) in the presence of celite, a form of silver carbonate on celite is generated that is very easily

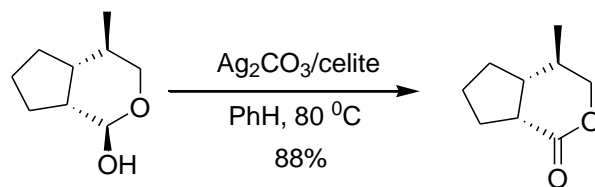
filtered and washed, and possesses an enhanced reactivity. The resulting so-called Fétizon's reagent is normally employed in refluxing benzene for the heterogeneous oxidation of alcohols to aldehydes and ketones. Fétizon's reagent is a very mild oxidant, possessing very diverse oxidation capabilities for alcohols differing in minor structural features. It is therefore a very useful, although expensive oxidant for alcohols, whenever very mild conditions or selective oxidations of polyols are required.

Abstracts

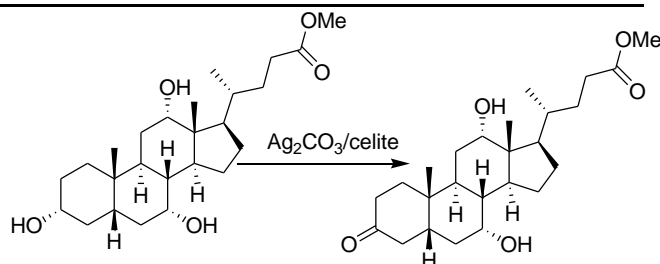
(A) Ag_2CO_3 adsorbed onto celite, also known as Fétizon's reagent, as this reagent proved to be efficient for the oxidation of para-phenylaminophenol into the corresponding quinone imide in an excellent yield [3].



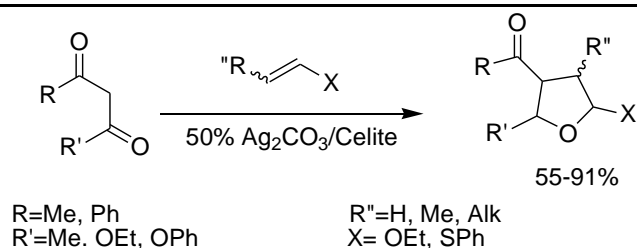
(B) Oxidation of Pyran with Fetizon's Reagent proceeded smoothly to yield dihydronepetalactone [4].



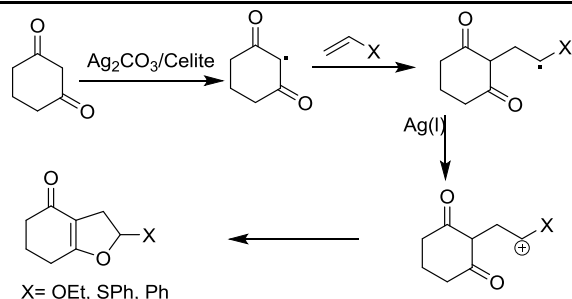
(C) Equatorial 3a-OH group in methyl cholate was selectively oxidized with silver carbonate-celite ($\text{Ag}_2\text{CO}_3/\text{celite}$) [5].



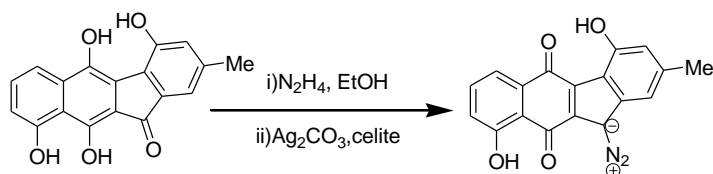
(D) The silver(I)/celite-mediated oxidative addition of 1,3-dicarbonyl compounds to terminal alkenes or internal enol ethers or thio ethers offers a facile and simple method for the synthesis of substituted dihydrofurans [6].



(E) The 1,3-dicarbonyl compound is first oxidized by silver(I) metal to generate the α -oxoalkyl radical, which then attacks the olefin to give the radical. This nucleophilic adduct now undergoes fast oxidation by silver(I) to give a carbonium ion, which cyclizes to the desired dihydrofuran. The method has been applied to the total synthesis of the natural product α -clausenan [6].



(F) 1,7-dideoxy-3-demethylkinafluorenone hydrazinolysis and then oxidized with Fetizon's reagent ($\text{Ag}_2\text{CO}_3/\text{celite}$), which affected the tandem oxidation of the hydrazone and 1,4-hydroquinone to the target quinone (1,7-dideoxy-3-Demethylprekinamycin) [7].



References

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