

### 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.

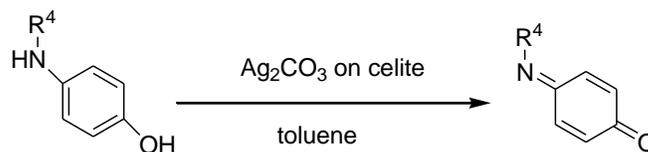
### Introduction

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

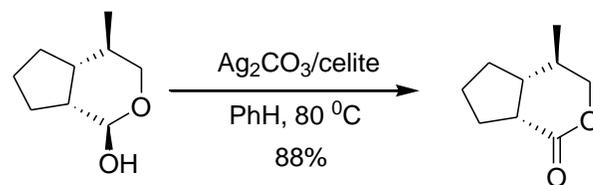
filtered and washed, and possesses an enhanced reactivity. The resulting so-called Fétizon's reagent is normally employed in refluxing benzene for the heterogeneous oxidation of alcohols to aldehydes and ketones. Fétizon's reagent is a very mild oxidant, possessing very diverse oxidation capabilities 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

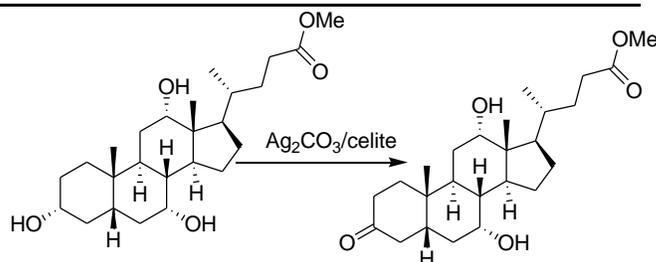
(A)  $\text{Ag}_2\text{CO}_3$  adsorbed onto celite, also known as Fétizon's reagent, as this reagent proved to be efficient for the oxidation of para-phenylaminophenol into the corresponding quinone imide in an excellent yield [3].



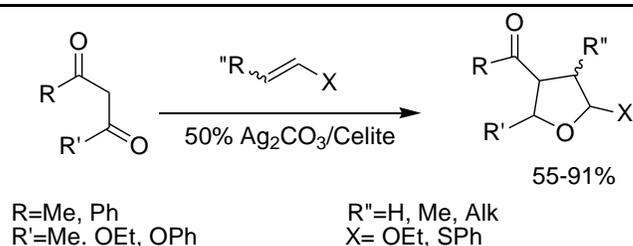
(B) Oxidation of Pyran with Fetizon's Reagent proceeded smoothly to yield dihydronepetalactone [4].



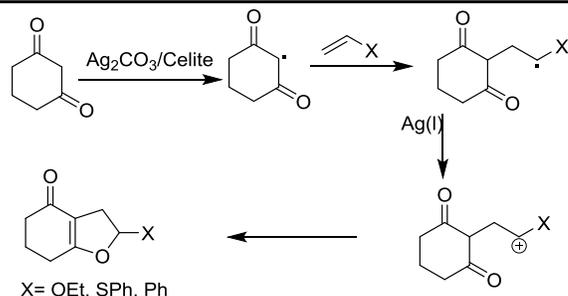
(C) Equatorial 3a-OH group in methyl cholate was selectively oxidized with silver carbonate-celite ( $\text{Ag}_2\text{CO}_3/\text{celite}$ ) [5].



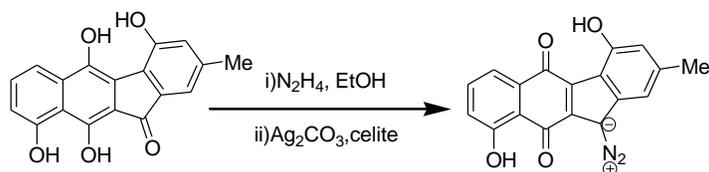
(D) The silver(I)/celite-mediated oxidative addition of 1,3-dicarbonyl compounds to terminal alkenes or internal enol ethers or thio ethers offers a facile and simple method for the synthesis of substituted dihydrofurans [6].



(E) The 1,3-dicarbonyl compound is first oxidized by silver(I) metal to generate the  $\alpha$ -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  $\alpha$ -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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