ABSTRACT

THESIS: An Investigation of \( N \)-Benzyl Amide Synthesis \textit{via} Oxopyridinium Salts

STUDENT: Maryam Baniasad

DEGREE: Master of Science

COLLEGE: Sciences and Humanities

DATE: July 2017

PAGES: 104

Over the last few years, 2-benzyloxy-1-methylpyridinium triflate (BnOPT), has proven to be an efficient benzyl transfer reagents. BnOPT allows for the transfer of benzyl groups to both alcohols and carboxylic acids to synthesize the corresponding benzyl ethers and benzyl esters, respectively. BnOPT eliminated the need for strong acidic or basic additives associated with the traditional methods of ether and ester synthesis, allowing for relatively neutral reaction conditions. Previous studies have shown the mechanistic pathway of transferring benzyl group using BnOPT is \( S_N1 \)-favored. In an \( S_N1 \)-like pathway, the identity of the nucleophile is less important as the driving force for these reactions would be the formation of a carbocation. Therefore, potentially any nucleophilic compound could be utilized in these reactions. The use of nitriles as nucleophiles in reactions with BnOPT was expected to afford \( N \)-benzylamides which are useful to synthetic chemists. Although nitriles are weaker nucleophiles compared to alcohols and carboxylic acids, it became logical to investigate their reactivity in this project. Exploring different oxopyridinium salts in reaction with nitriles showed that transferring benzyl group (or its analog) to nitriles is viable, even though it is not as efficient as transferring these groups to alcohols. Further investigation is needed to get the best conditions for an optimal reaction.