Studies Toward the Total Synthesis of Spiromastixone J

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Abstract

The Synthesis of Spiromastixone J was studied for two main reasons. First, Spiromastixone J has been isolated in very low yield from *Spriomastix sp.* fungus obtained by remotely-operated robot at roughly 3,000 meters below sea level.[1] Second, the molecule's reported antibacterial activity against Gram-positive bacteria is comparable to commercial antibacterial drugs.[1] These two factors combined to make Spiromastixone J a practical target for organic synthesis. On the path to the synthesis of Spiromastixone J, our synthetic scheme highlighted three key intermediates. The first being a resorcilate derivative. This summer there were three synthetic approaches taken to obtain this key resorcilate intermediate. The first approach, which was included as part of the project proposal, included a series of Claisen Condensations followed by ketene trapping and dehydration.[3] Experimental results showed the inability for this approach to yield high amounts of the intermediate and was abandoned. The second approach towards the synthesis of the resorcilate intermediate was a Diels-Alder Cycloaddition.[4,5] After many experimental failures of this reaction and no hint of success, this approach was also abandoned. The third and final synthetic approach taken this summer has been promising thus far. This approach utilizes a Robinson Annulation followed by elimination to bring about the resorcilate intermediate.[6,7] Currently, work is still being done on the optimization of the Robinson Annulation approach. It is hopeful that this approach will yield enough of our first key intermediate to be able to continue along the path of total synthesis.

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Brief Biography:

My name is Brandon Miller, I am currently a senior majoring in Chemistry here at the University of New Haven. I am the current President of my fraternity, Kappa Gamma Rho, I am the Greek Week Coordinator of the All Greek Council. I earned my Eagle Scout Award in 2014 and have been awarded the Brother of the Year award in my fraternity and the Fraternity Man of the Year award from the University of New Haven. My interest in organic chemistry was sparked when I first took Organic I and II my sophomore year. I have been involved in organic chemistry research with Dr. Cirillo since January of 2017 and hope to continue my work and turn it into a noteworthy publication. My career goal is to ultimately end up in the pharmaceutical industry as a medicinal chemist. I hope one day to be a part of a team that makes great strides towards developing drugs that will save lives.


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Introduction
Retrosynthetic Analysis