Nicole Langlois

Department of Chemistry & Chemical Engineering

Faculty Mentor: Dr. Pier Cirillo

Total Laboratory Synthesis of Cadiolide B

ABSTRACT

Infections due to strains of bacteria resistant to treatments, such as Methicillin-Resistant *Staphylococcus aureus* (MRSA), are rising in number. The search for new antibiotics is therefore vitally important. Cadiolides are a class of marine natural products isolated from *Botryllus* sp. that have been found to be effective at inhibiting the growth of MRSA at concentrations similar to, or lower than, the current leading antibiotics. The mechanism of action for inhibition is not yet fully elucidated. We have accomplished a total synthesis of Cadiolide B using a seven-step sequence that is similar in strategy to the one developed by Peixoto et al. Instead of using the decomposition of a dioxinone for the formation of a β-ketoester, we explored the use of an acylated Meldrum's acid adduct. After a number of setbacks, we were able to find success with this approach, and obtained Cadiolide B in an overall yield of 2.3%. While further optimization of the steps is still required, this method shows promise to be effective at synthesizing Cadiolide B, and possesses the potential for expansion to the production of analogs.