

## ABSTRACT

Author: Amy Orenstein  
Title: Evaluation Of Optimized Synthesis Reaction Of Antibacterial Tetrazole Derivatives  
Thesis Advisor: Adiel Coca  
Department: Department of Chemistry  
Year: 2021

A crucial aspect of modern healthcare is the pharmaceutical industry as drug development and discovery are essential to promoting global public health. One area of drug development where there is a critical need for new research is in the area of antibiotic development due to the rapid rate at which antibiotic resistance is increasing. Tetrazole compounds have shown great promise in providing a possible solution to this dilemma. Previous studies from Dr. Coca's research laboratory synthesized the product 1*H*-5-acetylbenzotrile and demonstrated its antibacterial properties against both Gram-negative and Gram-positive bacteria when implemented in a synergistic manner with other known antibiotics (trimethoprim, sulfamethoxazole, and amoxicillin trihydrate.) Most recently, Dr. Coca and co-workers worked to optimize the results produced by the tetrazole synthesis reaction by testing various reaction conditions. Hence, this project aimed to further build on that project and establish a new effective method for the synthesis of tetrazole derivatives.