Synthetic approaches for quinazolinone amination towards bioactive quinazolinone derivatives

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Abstract:

This project revolves around the Quinazolinone molecule as it is being used in the intermediary process of various drug synthesis. A bioactive form of quinazolinone proves promising for the treatment of Chagas Disease (C.D), a parasitic disease that is affecting as many as 8 million people in central and south America. Around 30-40% of those effected suffer from heart and digestive health conditions. C.D is expected to become an emerging health problem, especially in non-endemic regions due to population growth. This new synthesis provides an alternative to the currently available treatment for C.D, benznidazole (or nifurtimox), and avoids potential bottleneck of the treatment synthesis if demand grows.

The goal of this project is to improve the yield of the intermediary pathway to get to the bioactive quinazolinone and to discover any useful products formed from the amination. By testing different aminations of the alkylated scaffold from quinazolinone, such as reacting it with amines of varying degrees of substitution (1° vs. 2°) and aromaticity, or the absence of, in the amination group, the hope is to be able to provide data for future synthesis that utilizes a similar pathway. It is found that the more accessible an amine group is for a nucleophilic attack, the better the yield of the pathway would be, 1° amine would be more reactive than 2° amine, and aromatic amines better than aliphatic amines etc.