Treatment of Eumycetomas Through Synthesis of Fenarimol Analogues

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Abstract

Eumycetoma is a fungal form of a disease known as mycetoma, which is a disease that causes chronic infection to the skin and subcutaneous tissue\(^1\). Current antifungal medications are 25-35\% effective, are too pricey for the affected populations and have noticeable side effects\(^2\). This unfortunately leads some in the poorest communities around the world to amputate limbs affected by the infection, which can leave them unable to work. If amputation or current treatments are unsuccessful, death is likely to occur. So in order to solve the treatment gap, we partnered with Drugs for Neglected Disease Initiative (DNDi) to formulate possible drug synthesis that can effectively combat the disease, be affordable, and have very limited side effects. Due to the Covid pandemic, all work was project planning using articles approaching this research topic of fenarimol analogues in order to theorize a synthesis map. The theorized synthesis pathway first includes a Grignard reaction, then a chlorine substitution of an alcohol, and finish with a substitution of the alkyl halide with a triazole. This method, as well as the compounds chosen for the reaction, were selected for efficacy and price. According to prices found last summer, the cost to run the synthesis pathway to produce one gram of product was just under six hundred dollars. Based on our research, the compounds we are proposing are more effective than the current treatments, these compounds can likely be produced for much cheaper than the current treatments thereby providing greater access to the communities affected.

Works cited
