Synthetic Approach toward Substituted Phenylpropenols: Key Precursors to Potential Antivirals for Prevention of HRV Infection
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Human Rhinoviruses (HRV) are considered one of the most frequent infectious agents and are attributed to causing the common cold, increasing susceptibility to new infection, and exacerbating current illnesses. There are currently no antiviral therapies approved for the prevention of HRV infections, but recent studies have found antiviral activity from a naturally occurring phenylpropenoid. The compound showed some success in binding to the HRV pocket and preventing host cell infection. This proposal outlines a synthetic pathway toward the natural bioactive phenylpropenoid and structural derivatives. We anticipate that Wittig reaction of variously substituted aromatic aldehydes with methyl (triphenylphosphoranylidene)acetate followed by reduction of the ester functionality will generate various phenylpropenols. These compounds can then undergo Fischer esterification with a bis-enoate fragment, designed by another group, to create the target compound and 12 proposed derivatives with varying polarity and steric profile. Future studies would entail evaluation of the antiviral activity of these compounds to provide insight on the influence of structural variations on binding affinity to the HRV pocket. These efforts would provide synthetic insights for phenylpropenoid preparation and inform the development of potential antivirals for prevention of HRV infection and the common cold.