Alkene Migration Studies en Route to Altersolanol P

Studies toward the total synthesis of altersolanol P (AP), a new member of the altersolanol family of compounds, have been conducted in our laboratory. AP was recently isolated from an unknown Hypocreales fungus collected at a forest in Puerto Rico. AP exhibited broad-spectrum activity against Gram-positive bacteria and inhibited the growth of Gram-negative Haemophilus influenzae. Currently, a synthetic intermediate containing the complete carbon framework of AP has been synthesized via Lewis acid-mediated Diels-Alder cycloaddition on multi-gram scale (in 80% yield and 8:1 regioselectivity). An oxidation reaction of the cycloadduct provided efficient access to a 1,4-diene intermediate. From the 1,4-diene, a sequence of alkene isomerization (alkene migration) followed by dihydroxylation should give rise to AP. Currently, our efforts are focused on a methods study to isomerize the 1,4-diene to the 1,3-diene. The long-term goal of this project is to find an efficient route to synthesize Altersolanol P and related derivatives so that their biological activities can be further studied.

Student researcher: Jevica B. Salim
Faculty advisor: Dr. Steven M. Kennedy