

Work Summary

Development of novel approaches for the carbon-carbon bond formation is a continuous process in organic synthesis. So, several synthetic approaches for C-C bond forming reaction have been reported such as Wittig reaction, olefin metathesis, metal-catalyzed cross-coupling reactions, and many more. However, many of these methods suffer from poor atom economy and use of toxic reagents. It is highly desirable to develop cheap, selective, and highly atom-economical reactions and their application to the synthesis of bioactive natural products. Hence, we are working hard to develop an ideal strategy for the synthesis of pharmaceutically valuable compounds using novel transition metal-catalyzed carbon-carbon bond formation reaction as a key chemical transformation starting from inexpensive raw materials. The work submitted by nagabhushan is based on the development of new synthetic route for norpyrenophorin, a synthetic and unnatural 16-membered macrolactone which has essentially the same physiological activity as shown by natural macrocyclic dilactides, antifungal pyrenophorin and the antibiotic (-)-vermiculine. The shortest and efficient synthesis of norpyrenophorin has been reported via Ru-catalyzed oxidative coupling of allylsilanes/allyl esters with activated olefins. The developed method offers efficient access to highly functionalized 1,3-dienes, which are crucial intermediates for Diels-Alder reaction and many other reactions in organic synthesis. He has also developed a highly atom-/step economical Ru-catalyzed strategy for the shortest and straightforward synthesis of hydroxy β -sanshool and ZP amide-I, zanthoxylum-derived alkylamides isolated from *Szechuan pepper*. These natural products possess remarkable academic and industrial scrutiny due to their universal interest for both culinary and medicinal applications.


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