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Palladium tandem catalyzed 1,5-sulfonyl migration/Suzuki-Miyaura cross coupling reactions

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Natural products have mostly a heterocyclic scaffold and retain particular attention from organic chemists due to their biological activity and also their ability to provide an attractive platform to establish the usefulness of novel synthetic pathways. The aim is to study the Palladium catalyzed reactions as it is a widely used metal that offers abundant possibilities of carbon-carbon and carbon-heteroatom bond formations. Furthermore, the non-toxicity and the tolerance of palladium to many functional groups, widely present in natural products, are important attractive features. We have optimized the reaction conditions to get dihydropyrrolizidine 2 from ynone substituted *N*-sulfonyl pyrrolizidine 1 catalyzed with Pd(II) (Figure 1). This unique N-to-O 1,5- sulfonyl migration occurring during the cyclization was already described with gold(I) catalyst in our laboratory. Sulfonyl migrations with palladium catalysts allow us to consider the cross-coupling reaction in tandem. Palladium catalyzed cross-coupling reactions involving sulfonylated substrates and particularly tosylate remain challenging. We recently described the palladium catalyzed Suzuki- Miyaura cross-coupling reaction conditions of dihydropyrrolizidine 2. The scaffold of the coupling products 3 is found in biologically active natural products and especially antitumor alkaloids. The developed palladium catalyzed pathways are currently employed for the total synthesis of rhazinal.

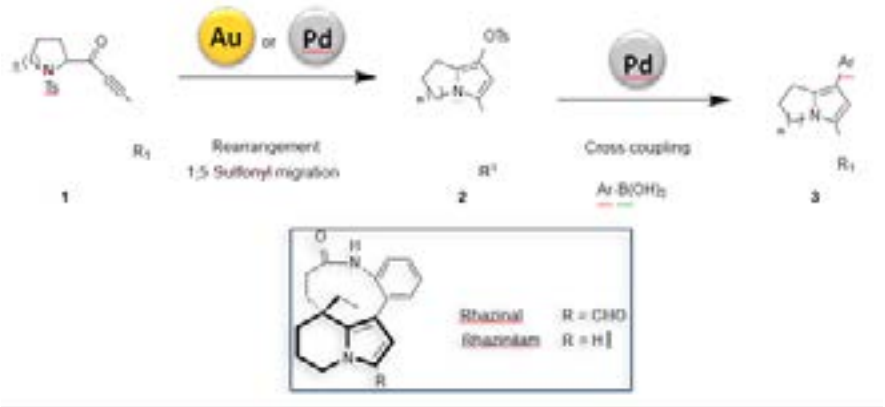

Figure 1: Palladium catalyzed sulfonyl migration and cross-coupling reactions

Biography

Fatih Sirindil is a 2nd year PhD student in the Laboratoire de Synthèse et Réactivité Organiques et Catalyse at the University of Strasbourg supervised by Dr. Patrick Pale and Aurélien Blanc. He is working on new Palladium and Gold catalyzed pathways towards natural products synthesis. After his Chemistry Bachelor in Strasbourg, he did a Master's degree on Drug Design and production at the Faculty of Pharmacy of Strasbourg. During his Master's Internship at Harvard Neuro Discovery Center-Harvard Medical School, he worked on the Lead Optimization for the treatment of Alzheimer's.

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