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Selenation of 2-arylimidazo[1,2-a]pyridines promoted by visible light using arylselenenic acids

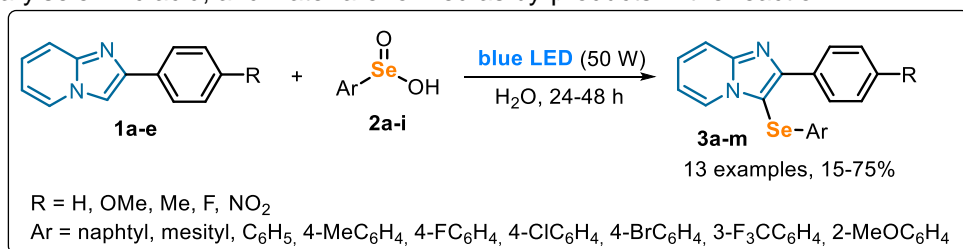
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ABSTRACT

The imidazo[1,2-a]pyridine derivatives are considered key structures due to their applications in materials science, medicinal chemistry and organometallics.¹ In particular, imidazo[1,2-a]pyridines functionalized at the position 3 have a variety of pharmacological activities, such as anticancer, antibacterial, and antifungal.² Due to this, efforts have been made to develop new methodologies to prepare this class of compounds. On the other hand, organoselenium compounds are known for their synthetic and pharmacological applications, presenting, for example, anticancer, antimicrobial, antioxidant, and antidepressant activities.³ Furthermore, in recent years, we have dedicated our efforts to developing light-mediated reactions for the synthesis of organochalcogen compounds, through environmentally friendly strategies.⁴ Therefore, as a continuation of our efforts, we report an alternative and mild method for the synthesis of 2-phenyl-3-(phenylselenyl)imidazo[1,2-a]pyridines starting from different 2-arylimidazo[1,2-a]pyridines and arylselenenic acids as selenylating agent, under 50 W blue LED irradiation and water as solvent. Using this method, thirteen products were obtained with yields ranging from low to moderate (15-75%) in reaction times of 24 h to 48 h (Scheme 1). The presented method does not require the use of metals, oxidants nor heating. Diaryl diselenide, which can be recovered converted to arylselenenic acid, and water are formed as by-products in the reaction.



Scheme 1. Selenation of 2-arylimidazo[1,2-a]pyridines using arylselenenic acid.

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