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Potassium Persulfate Promoted the One-Pot *Seleno*-Functionalization of Pyrazoles under Acidic Conditions

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ABSTRACT

In modern organic chemistry, the focus on environmental sustainability and efficiency is paramount. The "one-pot" reaction, is favored for its practicality as it reduces the need for multiple purification steps, thus aligning with sustainable practices.[1] In this sense, methods for obtaining *N*-heterocycles through one-pot procedures have emerged as an eco-friendly alternative in the preparation of added-value molecules, such as that containing pyrazoles core.[2] This *N*-heterocycles stands out as they are present in various drugs like Celecoxib and Crizotinib,[3] and agrochemicals such as Fluazolate and Fipronil.[4] Another hot scaffold, organoselenium compounds, has shown significant biological and redox-modulating properties, particularly in medicinal contexts.[5] Herein, we report a practical approach for the selective and one-pot synthesis of 4-selanylpyrazoles **5** or 4,5-bis(selanyl)pyrazole **6**. For this, it was used 1,1,3,3-tetramethoxypropane **1** (1 equiv) and aryl hydrazines **2** (1 equiv) in acetic acid at 120 °C for obtaining *in situ* the precursors 1-aryl-1*H*-pyrazoles **3**. Next, the selective selenylation reaction of the pyrazole intermediate **3** is promoted by diorganyl diselenides **4** and potassium persulfate (Figure 1). The products were proposed based on the ^{1}H NMR of precursor **3a** (Figure 2).[3a]

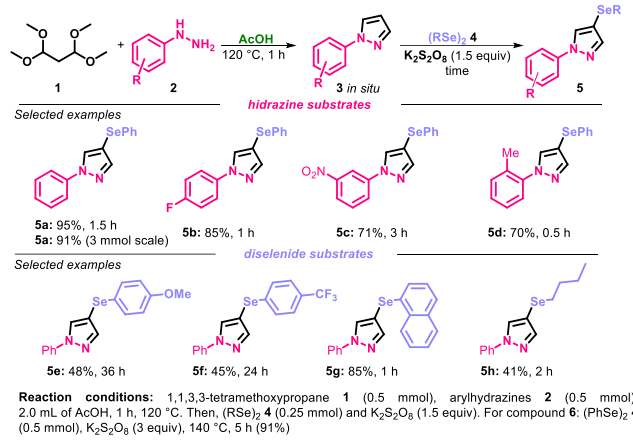

Figure 1. Selected scope of 1-aryl-4-(organylselanyl)-1*H*-pyrazoles **5a**-**h**.

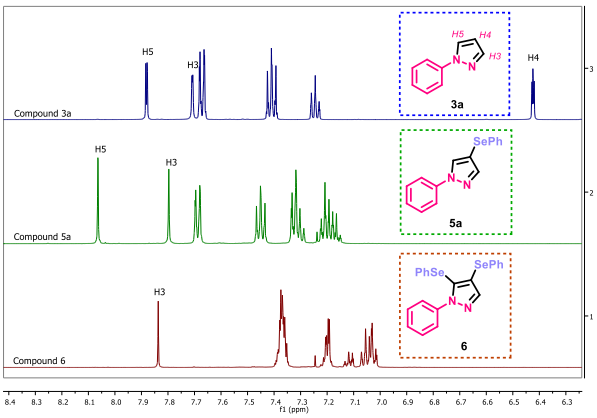

Figure 2. ^{1}H NMR experiments.

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