Synthesis of Indoles, Pyrazoles, and Pyridazinones

Category

Synthesis of Heterocycles

Key words

indoles

pyridazinones

pyrazoles

diazonium salts

alkenes

Significance: Reported is a one-pot synthesis of indoles, pyrazoles, and pyridazinones by a variation of the Japp–Klingemann Fischer indole synthesis, involving a trifluoromethylation. The reaction was found to well-tolerate a variety of functionalized arenediazonium salts and aryl allyl ketones. *meta*-Substituted arenediazonium salts provided mixtures of regioisomeric indoles (**A** and **B**). *para*-Substituted arenediazonium salts were also used with methyl pent-4-enoate to provide dihydropyridazinones in good yields.

Comment: The indole and pyrazole heterocyclic core is found in a number of top-selling drugs, such as sumatriptan, zolmitriptan, rizatriptan, tadalafil, and celecoxib (M. Baumann et al. *Beilstein J. Org. Chem.* **2011**, 7, 442). Therefore, a simple and efficient synthesis of these heterocyclic cores is a worthwhile quest. The developed method gives access to various trifluoromethylated heterocycles. Previously, a similar methodology has been used to synthesize pyrazoles (A. Citterio et al. *J. Heterocycl. Chem.* **1981**, 18, 763). Unexplained is the fact that all examples of dihydropyridazinone synthesis use *para*-substituted diazonium salt precursors.

SYNFACTS Contributors: Victor Snieckus, M. Selim Hossain (Snieckus Innovations)

Synfacts 2015, 11(1), 0021 Published online: 15.12.2014

DOI: 10.1055/s-0034-1379730; Reg-No.: V15614SF