Electrophilic Fluorination of Imidazoheterocycles by Selectfluor

Feng Wu[a,b], Tong Liu[a,*], Wanpeng Liao[a,b], Zhixu Zhou[b,c], and Hongyu Dai[b,c]

[a] *School of Chemistry and Chemical Engineering, Guizhou University, Guiyang, 550025 China*
[b] *Guizhou Engineering Laboratory for Synthetic Drugs, Guiyang, 550025 China*
[c] *School of Pharmaceutical Sciences, Guizhou University, Guiyang, 550025 China*
**e-mail: 764244030@qq.com*

Received March 1, 2022; revised March 14, 2022; accepted March 16, 2022

Abstract—Response surface analysis (RSA) has been used for optimization of the synthesis using selectfluor as a fluorine source and 2-ethyl-7-methylimidazole[1,2-*a*]pyridine-2, 7-dicarboxylate as a substrate. The latter has been synthesized by cyclization of methyl 2-aminopyridine-3-formate with ethyl bromopyruvate. The optimal reaction conditions have been determined to be as follows: time 3 h, temperature 30°C and selectfluor rate 2.3 eq. The triplicated verification experiments have led to the average yield of 87%. Four other fluorides of imidazoheterocycles have been synthesized under the optimized conditions. Structures of fluorides have been supported by ^{1}H NMR.

Keywords: selectfluor, response surface analysis, imidazoheterocycles, synthesis

DOI: 10.1134/S1070363222070234