

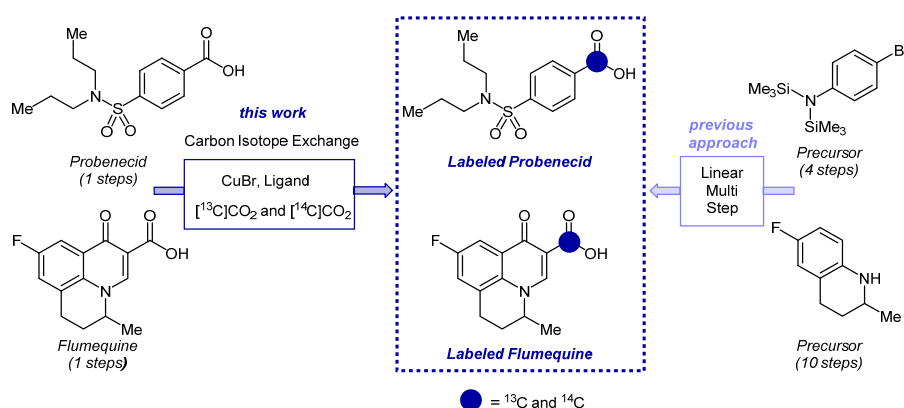
DYNAMIC CARBON ISOTOPE EXCHANGE OF PHARMACEUTICALS WITH LABELED CO₂

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Carbon-14 radiolabeling is a unique tool that, in association with β -counting and β -imaging technologies, provides vital knowledge on the fate of synthetic organic molecules such as pharmaceuticals and agrochemicals [1]. Traditional multistep synthesis and the associated costs have limited its utilization. Hydrogen isotope exchange reactions are routinely utilized for deuterium and tritium labeling; however, in the field of carbon isotope labeling, this concept has remained unexplored until recently [2]. We report a dynamic carbon isotope exchange with ¹⁴CO₂, the most fundamental and readily available source of radiocarbon [3]. This new process expands the concept of late-stage carbon radiolabeling with substrates bearing Csp² carboxylic acids and provides a direct access to end-use labeled pharmaceuticals.



[1] R. Voges, J. R. Heys, T. Moenius, in "Preparation of Compounds Labeled with Tritium and Carbon-14", John Wiley & Sons, Ltd, **2009**, 393.

[2] a) D. R. Gauthier, N. R. Rivera, H. Yang, D. M. Schultz, C. S. Shult, *J. Am. Chem. Soc.* **2018**, 140, 15596; b) C. Kingston, M. A. Wallace, A. J. Allentoff, J. N. deGruyter, J. S. Chen, S. X. Gong, S. Bonacorsi, Jr., P. S. Baran *J. Am. Chem. Soc.* **2019**, 141, 2, 774.

[3] G. Destro, O. Loreau, E. Marcon, F. Taran, T. Cantat, D. Audisio *J. Am. Chem. Soc.* **2019**, 141, 780.