

Greener approaches in the synthesis, 1,3-dipolar cycloaddition reactions of *N*-substituted-4-(trifluoromethyl)-*C*-phenylnitrones and anticancer activities of the cycloadducts

Bhaskar Chakraborty* and Sushma Tamang

Organic Chemistry Laboratory, Sikkim Government College (NBBGC), Gangtok, Sikkim, India

ABSTRACT The synthesis and cycloaddition reactions of some new *N*-substituted-4-(trifluoromethyl)-*C*-phenylnitrones using mechanochemical procedures have been reported. This solvent-free procedure with the addition of sodium bicarbonate showed a remarkably faster reaction rate, yields of the reported fluoronitrones, fluoro cycloadducts, compared to microwave-induced cycloaddition procedures. Unlike most of the nitrones reported in the literature (which are unstable and *in situ* cycloaddition reactions are preferred to avoid decomposition or dimerization of nitrones), *N*-substituted-4-(trifluoromethyl)-*C*-phenylnitrones reported here are stable and characterizable. Preliminary studies have shown that a few fluoro-cycloadducts can act *anticancer drugs*.

KEYWORDS Fluoronitrones, Intermolecular cycloaddition reaction, Fluoro-isoxazolines, Anticancer activity, Mechanochemistry

How to cite this article: Chakraborty, B. and Tamang, S. Greener approaches in the synthesis, 1,3-dipolar cycloaddition reactions of *N*-substituted-4-(trifluoromethyl)-*C*-phenylnitrones and anticancer activities of the cycloadducts, *Indian J. Heterocycl. Chem.*, **2026**, *36*, 53–60, <https://doi.org/10.59467/IJHC.2026.36.53>