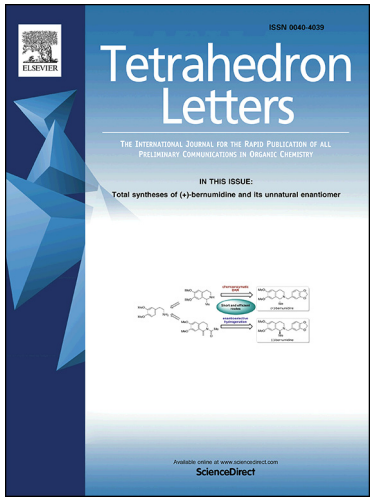

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PII: S0040-4039(18)31070-0
DOI: https://doi.org/10.1016/j.tetlet.2018.08.063
Reference: TETL 50238

To appear in: *Tetrahedron Letters*

Received Date: 10 July 2018
Revised Date: 24 August 2018
Accepted Date: 29 August 2018

Please cite this article as: Varga, V., Milen, M., Ábrányi-Balogh, P., Propylphosphonic anhydride (T3P®) mediated synthesis of 3-oxoisoindoline-1-carboxamides from 2-formylbenzoic acid, amines, and isocyanides. Preparation of isoindolinone alkaloids, *Tetrahedron Letters* (2018), doi: https://doi.org/10.1016/j.tetlet.2018.08.063

Propylphosphonic anhydride (T3P®) mediated synthesis of 3-oxoisoindoline-1-carboxamides from 2-formylbenzoic acid, amines, and isocyanides. Preparation of isoindolinone alkaloids

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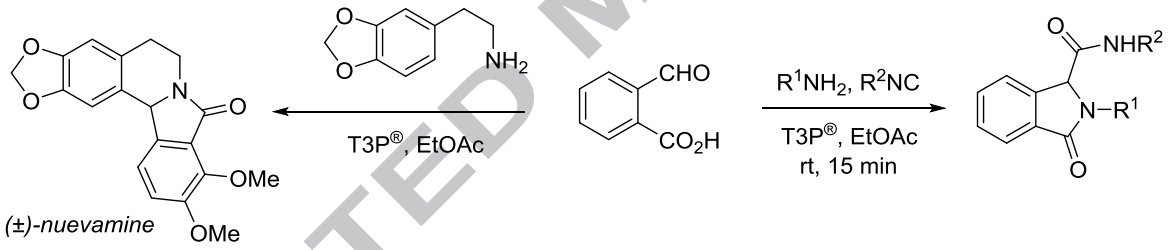
Graphical abstract



Abstract

Propylphosphonic anhydride (T3P®) was successfully applied to the synthesis of an isoindolinone library by the utilization of an Ugi four-center, three-component reaction (Ugi-4C-3CR). The use of T3P® significantly shortened the required reaction time and the corresponding products were obtained in good to high yields. Moreover, a side-reaction was observed when phenylethylamine derivatives and tryptamine were used as the amine component. The latter reaction was applied to the microwave-assisted, one-pot synthesis of the isoquinoline alkaloid (±)-nuevamine. Surprisingly, the traditional Ugi four-component reaction (Ugi-4CR) was unsuccessful in the presence of T3P®. In this case an α-amino amide was produced excluding the carboxylic acid from the multicomponent reaction.

Keywords: isoindolinones, Ugi-reaction, T3P®, natural product synthesis