Heteroaromatic aldehydes with unprecedented catalytic performance in selective radical reactions : synthesis of α-aminophosphonate scaffolds

Autorzy

Hamideh Aghahosseini

Ali Ramazani

Jafar Taran

Katarzyna Ślepokura

Tadeusz Lis

Rok wydania

2019

Czasopismo

Asian Journal of Organic Chemistry

Numer woluminu

8

Strony

1519-1527

DOI

10.1002/ajoc.201900241

Kolekcja

Naukowa

Język

Angielski

Typ publikacji

Artykuł

Streszczenie

Heterocyclic compounds have gained immense importance because of their low resonance energy and strong hydrogen-bonding abilities, which provide good catalytic potential in a variety of organic transformations. Herein an unexpected metal-free catalytic performance of heteroaromatic aldehydes has been reported. Accordingly, a unique method for the synthesis of new scaffolds of peptidomimetic compounds, α-aminophosphonates has been developed, which was difficult using previous methods. The aerobic auto-oxidation of heteroaromatic aldehydes acts as a driving force for the coupling of aromatic *N*-benzylamines and hydrophosphoryl compounds according to a one-pot, metal- and solvent-free procedure. Heteroaromatic aldehydes, in addition to their individual ability to promote selective radical reactions through the auto-oxidation process, can provide hydrogen bonding frameworks at different stages of the reaction and thereby change the reaction pathways and induce new activities and selectivities, which unveiled their other important catalytic features. We believe that this highlights the catalytic potential of heteroaromatic aldehydes, which may offer an opportunity to change the traditional harsh conditions necessary to generate alkyl radicals.

Słowa kluczowe

Aldehydes, aerobic auto-oxidation, aminophosphonates, heterocycles, radical reactions

Adres publiczny

http://dx.doi.org/10.1002/ajoc.201900241

Strona internetowa wydawcy

onlinelibrary.wiley.com