Chemical Papers
https://doi.org/10.1007/s11696-021-01603-0

ORIGINAL PAPER

Ultrasound-assisted synthesis and in vitro antimicrobial activity of novel 5-oxo-2-pyrrolidinecarboxamides and 7-oxo-2-azepanecarboxamides

Ahmed Majeed Jassem[1] · Beining Chen[2]

Received: 3 September 2020 / Accepted: 13 March 2021

Abstract

A facile one-pot reaction has been set up for the synthesis of novel 5-oxo-2-pyrrolidinecarboxamides and 7-oxo-2-azepanecarboxamides **4a-j** from three-component reaction of keto carboxylic acids **1a-d**, various primary amines **2a-b** and isocyanides **3a-b** under ultrasound irradiation. The present protocol offers attractive characteristics such as easy handling methodology, good-to-excellent yields, environmental friendliness, clean reaction, higher atom economy, convenient operation, and shorter reaction time. The newly synthesized 5-oxo-2-pyrrolidinecarboxamides and 7-oxo-2-azepanecarboxamides **4a-j** have been screened for their antimicrobial activity and the majority of these cyclic amides exhibited weak antimicrobial activity.

Keywords Ultrasound synthesis · Antimicrobial activity · Ugi reaction (U-4C-3CR) · 5-Oxo-2-pyrrolidinecarboxamides and 7-oxo-2-azepanecarboxamides