Design, characterization, in vitro antibacterial, antitubercular evaluation and structure–activity relationships of new hydrazinyl thiazolyl coumarin derivatives

Abstract

Herein, we describe the synthesis of 11new thiazolyl coumarin derivatives and evaluation of their potential role as antibacterial and antituberculosis agents. The structures of the synthesized compounds were established by extensive spectroscopic studies (Fourier transform infrared spectroscopy, ^{1}H-nuclear magnetic resonance, ^{13}C-nuclear magnetic resonance, 2D-nuclear magnetic resonance and liquid chromatography–mass spectrometry) and elemental analysis. All synthesized compounds were assayed for their in vitro antibacterial activity against a few gram positive and gram negative bacteria and antituberculosis activity against *Mycobacterium tuberculosis* H37Rv ATCC 25618 by using colorimetric microdilution assay method. Nine derivatives showed moderate anti-bacterial and anti-tuberculosis activities against all the tested strains. The highest activity against all the pathogens including*Mycobacterium tuberculosis* was observed by compound **7c** with MIC values ranging between 31.25–62.5 µg/mL, indicating that coumarin skeleton could indeed provide useful scaffold for the development of new anti-microbial drugs.