ABSTRACT

Nine Zn(II) complexes of valproic acid and nitrogen-donor ligands, formulating as $[Zn_2(valp)_4]$ (**1**), $[Zn(valp)_2$2,9-dmphen] (**2**), $[Zn(valp)_2$1,10-phen] (**3**), $[Zn(valp)_2$2,2-bipy] (**4**), $[Zn(valp)_2$4,4-bipy$]_n$ (**5**), $[Zn_2(valp)_4(quin)_2]$ (**6**), $[Zn(valp)_2(2\text{-ampy})_2]$ (**7**), $[Zn(valp)_2(2\text{-ampic})_2]$ (**8**) and $[Zn(valp)_2$2-picam] (**9**) were synthesized and characterized using IR, ^{1}H NMR, $^{13}C\{^1H\}$ NMR and UV-Vis spectrometry. The crystal structures of the complexes **2**, **6** and **7** were determined using single-crystal X-ray diffraction.

The *in-vitro* antibacterial activity of the prepared complexes was investigated against Gram-positive (*M. luteus, S. aureus* and *B. subtilis*) and Gram-negative (*E. coli, K. pneumoniae* and *P. mirabilis*) bacteria using agar diffusion method. All prepared complexes except complexes **7** and **8** exhibit antibacterial activity against different Gram-positive and Gram-negative bacteria. The effect of complexation on the antibacterial activity of the parent ligands was also investigated for complexes **1**, **2**, **3** and **6**. The complexes **1** and **6** showed higher antibacterial activity than their parent valproate ligand. Complex **2** showed higher antibacterial activity against Gram-negative bacteria than 2,9-dmphen ligand. For Gram-positive bacteria the activity of **2** and 2,9-dmphen are similar. The antibacterial activity of 1,10-phen ligand against both Gram-positive and Gram-negative bacteria was decreased upon complexation with zinc valproate.