Metal organic frameworks offer diverse chemistry as metal-medicine. In these complexes, the metal serves to coordinate the organic ligands. The direct use of metal complexes sometimes is restricted due to lethal side effects. To overcome their disadvantages, solid lipid nanoparticles (SLNs) have been introduced as an alternative drug delivery systems. They carry anticancer compounds with different physiochemical characteristics, higher drug stability, improved pharmacokinetics and controlled drug release. In this study, we synthesized bimetallic Zn(II) complex, [Zn(bipy)2(C6H5)2CHCO2)](ClO4)(bipy), with the reaction of bifunctional 2,2′-bipyridine (bipy) and diphenyl acetic acid (C6H5)2CHCO2H). SLNs formulation prepared by hot homogenization methods and characterized by Zeta Sizer, NMR (Nuclear Magnetic Resonance) and SEM (Scanning Electron Microscopy). In conclusion, SLNs of Zn(II) complex have good stability at -16.5 mV and average particle size around 230 nm. We determined chemical structure as 3D by using XRD. In addition, NMR spectra were carried out tween 80, complex and complex loaded SLN formulations and these spectra compared with each other. According to NMR spectra, both difference in chemical shifts and new peaks were not observed for complex loaded SLN and placebo SLN. Moreover, the particle size of Zn (II) complex-SLN formulations was also supported by using SEM. In general, the Zn (II) complex-SLN formulations were spherical shape and uniform in particle size.

Keywords: Zn, Solid lipid nanoparticles (SLN), Scanning Electron Microscopy (SEM), XRD.
Fig. 1: Figure 1. Sem photo of Zn(II) complex-SLN formulation.