

## **Polydopamine Nanoparticle as a Stable and Capacious Nano-Reservoir of Rifampicin**

**Authors :** Tasnuva Tamanna, Aimin Yu

**Abstract :** Application of nanoscience in biomedical field has come across as a new era. This study involves the synthesis of nano drug carrier with antibiotic loading. Based on the founding that polydopamine (PDA) nanoparticles could be formed via self-polymerization of dopamine at alkaline pH, one-step synthesis of rifampicin coupled polydopamine (PDA-R) nanoparticles was achieved by adding rifampicin into the dopamine solution. The successful yield of PDA nanoparticles with or without the presence of rifampicin during the polymerization process was characterized by scanning electron microscopy, Fourier transform infrared spectroscopy, and Raman spectroscopy. Drug loading was monitored by UV-vis spectroscopy and the loading efficiency of rifampicin was calculated to be 76%. Such highly capacious nano-reservoir was found very stable with little drug leakage at pH 3.

**Keywords :** drug loading, nanoparticles, polydopamine, rifampicin

**Conference Title :** ICNB 2016 : International Conference on Nanotechnology and Biotechnology

**Conference Location :** Melbourne, Australia

**Conference Dates :** February 04-05, 2016