Development of electro-sprayed multi-composite particles for prospective drug delivery

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Ever since the introduction and pharmaceutical development of antibiotics (~1940's), public health and well-being has improved significantly. (Hajipour MJ, 2012). However, due to drug misuse, mismanagement and poor patient compliance, bacterial antibiotic resistant now poses a serious threat to global healthcare. Antibiotic resistance is a new and upcoming threat to global healthcare. Many novel methods have been developed and tested to combat and prevent this resistance; one such technique involves the use of nanotechnology, specifically nanoparticles created using the Electro Hydrodynamic atomization (EHDA) technique (Huh AJ, 2011) and the use of metallic Nanoparticles (NP). Electrospraying process (ESy) is a method of atomizing droplets acquired by an electrically forced liquid (e.g. polymeric solution) jet through a needle/nozzle into a collecting platform. The advantages of such nanoparticles and nano-based drugs are enhanced bioavailability and better target-specificity. In this piece of work, we have successfully prepared PLGA and silver composite particle containing Amoxicillin (AMX) using the electrospraying technique. The morphology, chemical structure and the thermal behavior of the prepared formulations were investigated. The SEM images showed that particle sizes of the prepared particles are below 10 μm, which is essential for further biological use. The results confirmed that Amoxicillin was successfully entrapped in the prepared particles.

Biography

Suleman Ramzan has completed his degree in Pharmaceutical Science and is currently pursuing his PhD on the use of nanomaterials for prospective drug delivery and against antimicrobial agents resistant to common therapeutic treatments.