

Nanoparticles as new tool for treatment of tuberculosis

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Abstract: Tuberculosis also known as TB is an infectious disease commonly caused by *Mycobacterium tuberculosis*. It is a transmissible disease usually effecting the lungs and comes at second place in case of infective disease after AIDS. The incidence of T.B is increasing in many parts of world especially in the developing countries with 8 million new cases and 2 million deaths occurring worldwide due to T.B per year. WHO (world health organization) has put forward the combination of several drugs for the treatment of T.B such as rifampicin, isoniazid, pyrazinamide and ethambutol. These drugs although effective, are associated with some serious side effects and drug interactions varying from mild to fatal such as dizziness, muscular twitching, convulsions, hypersensitivity reactions etc. These drugs also have shorter $t_{1/2}$ (only 1-4 hrs) which can result in neurotoxicity and hepatotoxicity. Therefore in order to decrease the drawbacks and to improve the treatment some kind of effective system is needed. Nanotechnology offers a drug delivery system that has more potential for the treatment of TB than the conventional treatment. Nanoparticles as nanocarriers are presently emerging as potential drug delivery systems targeting the drug to certain physiological sites such as lymph nodes and thereby promising a treatment strategy for TB. The important advantages of nanoparticles as drug carriers are high stability, possibility of administration of both hydrophobic and hydrophilic substances, variable routes of administration, controlled and sustained release of drug etc.

Keywords: Tuberculosis, *Mycobacterium tuberculosis*, hepatotoxicity, nanotechnology, nanoparticles, high stability.