Researchers at the University of South Florida have developed novel targeted PEGylated liposomes for co-delivery of siRNA and anti-tubercular drugs for the treatment of mycobacterium infection.

Tuberculosis (TB), which is caused by mycobacterium tuberculosis (MTB), remains a major global health problem in developing countries. In 2012, an estimated 8.6 million people developed TB and 1.3 million died from the disease. Chemotherapy is the basis and main approach to treat TB. Additionally, first line anti-tubercular drugs include Streptomycin (SM) among others.

There are many disadvantages of chemotherapeutics including long treatment periods, dosages and frequency, side effects, poor compliance, poor permeability, drug resistance, etc. Streptomycin, specifically, is effective as a single agent in a clinical setting, however it can also induce neurotoxic effects and drug resistance.

Our inventor’s have developed novel anti-TB liposomes that are capable of encapsulating common clinical anti-TB drugs and can be coated with TGF-β1 siRNA. These multifunctional liposomes have proven to be stable under ambient conditions, display low cytotoxicity, and prolonged release in in vitro studies. This nanoparticle system address many of the issues with the current gold standard of chemotherapeutic treatment and has the potential to significantly improve the treatment of tuberculosis.

**ADVANTAGES:**
- Targeted delivery
- Sustained release
- Decreased side effects

**More Effective Treatment for Tuberculosis**

The morphology and size distribution of the liposomal nanoparticles as observed by SEM (A) and TEM (B-C)

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