Resistance to the standard therapy is one of the main problems in tuberculosis (TB) chemotherapy. Isoniazid (INH) being primary drug of choice, is a mycolic acid synthesis inhibitor but Mtb resistance to INH occurs due to modification in the binding site of the enzyme used in the synthesis of mycolic acid. Autophagy is a cellular pathway which involves degradation of protein and organelle degradation, which interns associated with many human infectious diseases. Upregulation of this particular pathway in macrophages causes mycobacterium phagosomes to mature into phagolysosome. This leads to death of the mycobacterium. If it is possible to deliver autophagy inducer drug in combination of INH in a single particulate system may be an alternative therapy for tuberculosis. Co-crystal formulations offer opportunity to deliver multi-component system. This may be beneficial to deliver drug combination together. In this report, we made attempt to combine and Niclosamide (autophagy inducer drug) with an INH (standard anti-TB drugs). We developed co-crystal of INH and NIC which were characterized by different techniques, like, DSC, PXRD, TEM etc. The standard therapy is supposed to kill the Mtb in its own mechanism, while autophagy-inducer may initiate an alternative mechanism to clear the bug. We are developing combination therapy using both drugs in form of co-crystals. The proposed formulation is supposed to reduce the chance of drug resistance and may shorten the therapy time.


Keywords: Autophagy, co-crystals