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Development of Inhalable Chitosan nano system conjugated with Hyaluronic acid for treatment of Tuberculosis

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Tuberculosis is the global health burden and the conventional therapies are unable to deliver the drug to the alveolar macrophages, where the causative agent (*Mycobacterium tuberculosis*) resides and replicates. The potential of chitosan polymer conjugated with hyaluronic acid was exploited for the targeted drug delivery via inhalation [1]. Nano mediated drug delivery vehicle was synthesized using ionic gelation for the active targeting of the alveolar macrophages. Dry powder inhalers (DPI) comprised of biodegradable polymeric nanocarriers with adequate aerodynamic profile, drug release and biocompatibility is a major challenge for pulmonary drug delivery. Quality by design approach was therefore employed to critically evaluate the risk assessment profile to enhance the product optimization [2]. Physicochemical tests including FT-IR, DSC, TGA, XRPD, SEM, size analyses and aerodynamic characterization provided useful data about compatibility and stability of the nanoparticulate system. Nano DPI might hence improve the drug bioavailability by the reduction in dosing frequency and toxicity [3].

References

1. Momin, M.A., Tucker, I.G., Das, S.C. *Int. J. Pharm.* 550(1-2), 398-417 (2018)
2. Csóka I., Karimi K., Mukhtar M., Ambrus R. *Acta Pharm. Hung.* 89(2), 43-62 (2019)
3. Gelperina, S., Kisich, K., Iseman, M.D. and Heifets, L. *Am J Respir Crit Care Med*, 172(12), 1487-1490 (2005)

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