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Mycobacterium tuberculosis hiding in mesenchymal stem cells are unresponsive to anti-TB drugs- a possible role of ABCG2 efflux pumps

Introduction: Mycobacterium tuberculosis, responsible for the deadly disease Tuberculosis, has a remarkable tendency to evade the host immune responses and persist inside the host cells. One such unconventional niche has been identified as bone-marrow mesenchymal stem cells (BM-MSCs) that have been suggested as a protective niche wherein bacteria can survive inspite of antibiotic treatment. However, an insight into these processes is largely unknown.

Conclusion: Our studies demonstrated that the bacteria residing inside BM-MSCs are less responsive to the action of anti-TB drugs as compared to when they are residing inside macrophage cells, hence, the pathogen still survives inside BM-MSCs. We have also shown a possible involvement of ABCG2 efflux pumps in conferring this unresponsiveness to the pathogen in view of the fact that inhibition of these pumps led to increased susceptibility and thus enhanced killing of M.tb inside BM-MSCs. The observations are suggestive that an adjunctive chemotherapy of efflux pump inhibitors along with the existing anti-TB drugs may be an attractive way to eliminate the bacteria residing inside BM-MSCs. (Kaur, S et, al. Infect Genet Evol. 2021 Jan; 87:104662. doi:10.1016/j.meegid.2020.104662.).

Biography

Dr. Garima Khare is working as an Assistant Professor at Department of Biochemistry. She completed her Ph.D. from Department of Biochemistry, University of Delhi South Campus and is a recipient of the prestigious Innovative Young Biotechnologists Award of the Department of Biotechnology, Government of India in 2013. She has published 24 research papers in international peer-reviewed journals and 4 book chapters. She has more than 600 citations for her published articles, h-index of 14 and i10-index of 19. She is the recipient of various research grants from funding agencies. She has peer reviewed several manuscripts in international journals. She is guiding a number of Ph.D. and M.Sc. students for research.



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