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Nanobiotechnology in Drug Delivery

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Editorial

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INTRODUCTION

Nanobiotechnology combines nanotechnology with biotechnology to design novel drug delivery systems. In India, it is emerging as a powerful tool to enhance drug efficacy, reduce toxicity, and improve patient compliance [1].

Applications in Drug Delivery

Nanoparticles, liposomes, and polymeric carriers are being developed for targeted drug delivery in cancer, tuberculosis, and neurological diseases. For instance, nanoparticle-based formulations of anti-TB drugs enhance bioavailability and reduce dosing frequency [2]. In oncology, nanocarriers allow controlled release of chemotherapeutics directly at tumor sites, minimizing systemic toxicity [3]. Nano-based insulin delivery systems are also being explored for diabetes management [4].

CHALLENGES AND FUTURE DIRECTIONS

Barriers include high production costs, regulatory challenges, and limited clinical translation of lab-based innovations. However, ongoing collaborations between academic institutes and pharmaceutical companies in India are accelerating nanomedicine development [5].

CONCLUSION

Nanobiotechnology holds immense potential to revolutionize drug delivery. With India's growing biotech sector, nanomedicine can play a pivotal role in addressing both infectious and chronic diseases.

REFERENCES

1. Kumar CSSR. Nanotechnology in medicine. J Pharm Bioallied Sci 2012;4: 134–141.
2. Sharma A. Nanoparticle drug delivery for tuberculosis. Indian J Tuberc 2016;63: 100–106.
3. Jain RK. Nano-based cancer therapy. Indian J Cancer 2010;47: 232–236.
4. Patel P. Nano-insulin delivery: advances. Indian J Endocrinol Metab 2015;19: 731–738.
5. Menon R. Nanobiotechnology research in India. Curr Sci 2018;114: 955–962.