DEVELOPMENT OF A NOVEL *IN SITU* GELLING INTRANASAL SYSTEM CONTAINING RESVERATROL LOADED PLGA NANOPARTICLES FOR MANAGEMENT OF EPILEPSY

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ABSTRACT

Drug delivery to the brain is highly challenging due to the blood-brain barrier (BBB). Resveratrol (RESV) has antioxidant and neuroprotective effects but limited bioavailability caused by low solubility, photosensitivity and rapid metabolism. This study develops an intranasal *in situ* gel containing RESV-loaded PLGA nanoparticles for targeted nose-to-brain delivery in epilepsy management. The gel uses thermosensitive Kolliphor® P 407, mucoadhesive HPMC K-100, and mannitol for tonicity. It was characterized for particle size, gelation, entrapment efficiency, drug content, and stability and evaluated through *in vitro* and *in vivo* studies, offering a promising alternative treatment for epilepsy.