# DUAL DRUG – LOADED LIPID NANOPARTICLES FOR THE TREATMENT OF PARKINSON'S DISEASE

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## Abstract

The aim of the present study is formulation of solid lipid nanoparticles (SLNs) containing combination of Bromocriptine and Resveratrol for effective management of Parkinson Disease. The goal of this therapeutic strategy is to reduce the occurrence and severity of L-DOPA (LD)-associated motor fluctuations and dyskinesia, and provide good long-term safety and tolerability. Dopamine agonists such as Bromocriptine provide moderate symptomatic benefit and delay the development of dyskinesia compared with levodopa. Resveratrol is a natural polyphenolic compound suggesting that they could have important antioxidant properties and resveratrol could possibly reduce the side effects of bromocriptine but its oral bioavailability is very low due to its extensive hepatic and presystemic metabolism. One of the prime benefits of combination therapy is the potential for providing synergistic effects. However, bromocriptine suffers from low bioavailability and short half-life. so it would be a good candidate for a sustained drug-delivery system. SLNs were prepared using high speed homogenization followed by ultrasonication technique. The prepared SLNs were characterized by entrapment efficiency percent (EE%), particle size distribution, zeta-potential, and cumulative percentage release. The mean particle size measured ranged from 100 nm- 220 nm. The EE% ranged between 81.00% ± 0.92-92.52% ± 0.10. Smaller size and narrow size range allows them to cross tight endothelial cells of the blood–brain barrier (BBB), escape from the reticuloendothelial system (RES), and bypass liver. They have comparatively higher drug entrapment efficiency, render the drug more stable in their lipid matrix, and provide a controlled release lasting up to several weeks. The prepared SLNs exhibited a zero-order sustained release profile and met the requirement for a brain targeting, hence it could be a promising strategy to deliver bromocriptine to the brain.

Keywords: Bromocriptine, Dyskinesia, Parkinson disease, Solid lipid nanoparticles

## Professional Biography

Ms. Asha Spandana K. M. is currently pursuing her PhD in Pharmaceutical Sciences in the area of Brain targeted drug delivery system at JSS University, Mysuru, India. She accomplished her undergraduate from JSSCP, Mysuru under RGUHS, Bengaluru in 2010 and M. Pharm in Pharmaceutics from RGUHS, Bengaluru, under merit (GPAT-qualified) in 2013. She has published 4 papers in national and international level.



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