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## Targeted delivery of diethylcarbamazine citrate to the lymphatics using solid lipid nanoparticles

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Lymphatic filariasis is a parasitic disease characterized by the presence of adult filarial worms in the lymphatics. Diethylcarbamazine citrate (DEC), because of its hydrophilic nature has poor availability in the lymphatics, which allows the adult worms to reside in the lymphatics. Hence, to target DEC to the lymphatics and to increase its retention time, solid lipid nanoparticles (SLNs) of DEC were prepared by ultrasonication method by varying the proportions of Compritol 888 ATO, poloxamer 188 and soya lecithin. The prepared SLNs were evaluated for size, shape, texture, surface charge, physical nature of the entrapped drug and entrapment efficiency. The size of the particles were in the range of  $27.25 \pm 3.43$  nm to  $179 \pm 3.08$  nm and were found to have a spherical morphology. The entrapment efficiencies of the formulations were low and a maximum entrapment efficiency of  $68.63 \pm 1.53$  % was observed. *In vitro* drug release studies carried out in pH 7.4 PBS displayed a rapid release and the maximum time taken for the complete loaded drug to release was 150 minutes. *In vivo* studies were carried out in male Sprague Dawley rats to quantify the concentration of DEC in blood and lymph. The results indicated a 4.5 fold increase in the amount of drug that has reached lymphatics when administered through solid lipid nanoparticles. This increased availability of DEC in the lymphatics will help in eradicating the macrofilariae in the lymphatics.

### Biography

Siram Karthik has completed his BPharmacy and MPharmacy from The Tamil Nadu Dr. MGR Medical University, India. Currently, he is working on his Doctoral research work as a Research Scholar in PSG College of Pharmacy, India. His area of research includes lipid based nano drug delivery systems for lymphatic targeting of antifilarial and anticancer drugs. He has published his works in reputed international journals and has also communicated his research works at many international conferences.

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