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# Mucoadhesive nanostructured lipid carriers (NLCs) as potential carriers for improving oral delivery of curcumin

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## Abstract

**Purpose:** To examine effects of polymer types on the mucoadhesive properties of polymer-coated nanostructured lipid carriers (NLCs).

**Experiment:** Curcumin-loaded NLCs were prepared using a warm microemulsion technique followed by coating particle surface with mucoadhesive polymers: polyethylene glycol400 (PEG400), polyvinyl alcohol (PVA), and chitosan (CS). The physicochemical properties and entrapment efficacy were examined. *In vitro* mucoadhesive studies were assessed by wash-off test. In addition, the stability of

mucoadhesive NLCs in gastrointestinal fluids and the pattern of drug release were also investigated.

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on the type of polymer coating. Up to 80% drug entrapment efficacy was observed. *In vitro* mucoadhesive studies revealed that PEG-NLCs and PVA-NLCs were adhered strongly to freshly porcine intestinal mucosa, more than 2-fold mucoadhesive compared to CS-NLCs and uncoated-NLCs. The particle size of all polymer-coated NLCs could be maintained in both simulated gastric fluid (SGF) and simulated intestinal fluid (SIF) suggesting good physical stability in physiological fluid. In contrast, uncoated-NLCs showed particle aggregation in SGF. *In vitro* dissolution studies revealed a fast release characteristic.

Keywords: [Nanostructured lipid carriers](#), [mucoadhesion](#), [curcumin](#), [polyvinyl alcohol](#), [polyethylene glycol 400](#)

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## Additional information

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