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Paper Title:	Development and Characterization of a Meloxicam-Loaded Pluronic F-127/Acacia Gum Gel
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Abstract

Thermosensitive hydrogels like Pluronic F-127 (PF-127) offer controlled drug release and enhanced tissue penetration due to their temperature-induced gelation. This study investigated an injectable hydrogel drug delivery system based on PF-127 incorporating natural gum (acacia gum, AG) and encapsulating the anti-inflammatory drug meloxicam (MX) to prolong drug release. The hydrogel exhibited a gelation time of approximately 7 minutes and displayed the highest viscosity up to ~3,200 InPa·s among the formulations containing acacia gum. Cytotoxicity studies using the L929 cell line over seven days indicated a good proliferation and no cytotoxicity up to 7 days. Furthermore, an overall MX release profile from the hydrogel was controlled as a slow release over 24 hours when AG was incorporated. Thus, the incorporation of natural gum enhanced the hydrogel's viscosity, biocompatibility, and sustained drug release, demonstrating potential for applications in materials science, drug development, and cost-effective formulations.