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***In-vitro* investigations of baclofen-loaded PLGA nanoparticles**

ABSTRACT. Nanoparticle (NP)-based targeted drug delivery is a promising approach for tackling various health conditions where multiple side effects arise in conventional treatment. We have previously developed baclofen (Bcf)-loaded PLGA NPs for combating neuropathic pain. In the present work, levels of pro-inflammatory (TNF- α , IFN- γ , IL-6) and anti-inflammatory (IL-4 and IL-10) cytokines were studied in RAW 246.7 murine macrophage cells using the enzyme-linked immunosorbent assay (ELISA) technique. It was observed that Bcf-PLGA-NPs were able to suppress levels of TNF- α , IFN- γ and IL-6 while aqueous Bcf was effective in upregulation of IL-4 (anti-inflammatory cytokine). No significant effect was observed in IL-10, neither with the drug-loaded NPs nor with the aqueous drug. These findings suggest Bcf-PLGA-NPs act as potent pro-inflammatory cytokine inhibitors, which could be beneficial for alleviating inflammation-induced neuropathic pain conditions.

Keywords: ELISA, inflammation, poly(lactic-co-glycolic acid)

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