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ABSTRACT

The purpose of the study was to develop caffeine-loaded gold nanoparticles (AuNPs) using a poly(lactic acid)-polyethylene glycol-poly(lactic acid) (PLA-PEG-PLA) polymer to enhance the anti-inflammatory activity of caffeine. Caffeine-loaded AuNPs were conjugated to PLA-PEG-PLA copolymer matrix via π-back bonds between AuNPs and the ester carbonyl group of the polyester. The π-back bonded ester carbonyl oxygen strongly interacted with the caffeine molecule and exhibited enhanced anti-inflammatory activity. The physico-chemical characteristics of the resulting nanoconjugates were evaluated by a series of microscopic,