

Independent Study Title	Preparation of Hyaluronic Acid –Based Hydrogel Nanoparticles Containing Alpha Arbutin
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ABSTRACT

The objectives of this study were to synthesize HA- based hydrogel nanoparticles loading alpha arbutin as whitening agent. The hyaluronic acid (HA) and poly (ethylene glycol) diglycidyl ether (PEGDG) as biodegradable and biocompatible materials were used through chemical crosslinking. The hydrogel nanoparticles containing the alpha arbutin as whitening agent were characterized by mean of a scanning electron microscope (SEM), an optical electron microscope. The particles size was studied by SEM and Zetasizer. The HA and PEGDG were confirmed by Fourier transform infrared spectroscopy (FT-IR) and X-ray diffractometry (XRD). The entrapment efficiency and swelling ratio were examined as well. The results showed hydrogel nanoparticles obtained ranged from 800-950 nm at their dried states and above 1496 nm at wetting state. The FT-IR spectrum from stretching vibrations of C-O bond due to the chemically crosslinked hyaluronic acid and PEGDG were observed. From XRD the peaks of hydrogel shift a bit and broader when compare with HA. The Entrapment efficiency is 99.88% and swelling ratio is 8/8 g of hydrogel.

Keywords: HA-based hydrogel nanoparticles/Crosslinking polymerization/
Alpha arbutin