

Self-Assembled Fluorescent and Antibacterial GHK-Cu Nanoparticles for Wound Healing Applications

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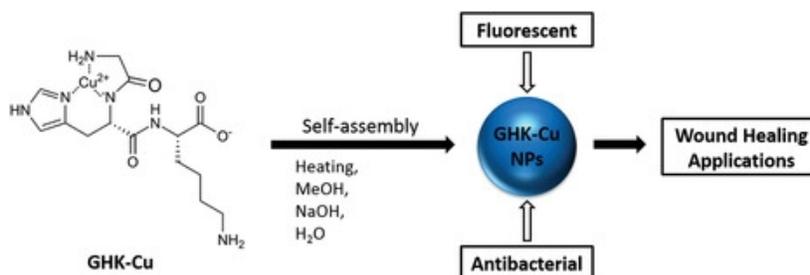
GHK-Cu has both healing and anti-bacterial actions but GHK-Cu also can be inactivated by the bacteria in wounds. There is a discussion of GHK-Cu and anti-bacterial effects at <http://www.skinbiology.com/GHK-Infection-Protection.html>

This important new paper is copyrighted, so we cannot upload a printable copy for you. In summary, the use of the GHK-Cu nanoparticles both improves wound cell function as measured by L929 dermal fibroblasts in culture and acts as an antibacterial against two common bacteria (*E. coli* and *S. aureus*).

The scratch assay method was used with fibroblasts to evaluate wound closure in vitro. The GHK-Cu NPs after 12 hours enhanced wound closure the most (around 45%) compared to the free GHK-Cu molecules (around 17%) and the untreated control (around 5%) after 12 hours. By 24 hours, there was nearly complete wound closure with GHK-Cu NPs and only 37% with free GHK-Cu and in the controls.

Abstract of new paper

GHK-Cu is demonstrated with the abilities to improve wound healing, accelerate anti-inflammatory activity, and repair DNA damage. However, the instability of the GHK-Cu in biological fluids is always a big challenge for its long-term and efficient function at the target site. Therefore, the self-assembled GHK-Cu nanoparticles (GHK-Cu NPs) are investigated in this work to solve the instability issue. The crystalline nanostructure within the GHK-Cu nanoparticles offers them visible and near-infrared fluorescent properties. With the excellent self-assembly performance, the antibacterial properties of GHK-Cu NPs are demonstrated using *E. coli* and *S. aureus*. The L929 dermal fibroblast cells are utilized to prove the good biocompatibility and enhanced wound healing applications of GHK-Cu NPs. This study could pave the way for the design and elaboration of a new class of fluorescent peptides with various biological functions in biomedical applications.



<https://onlinelibrary.wiley.com/toc/15214117/0/0>

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