

Chronic diabetic wounds

Chronic diabetic wounds, which are associated with persistent [inflammation](#) and impaired [angiogenesis](#), are frequent [Diabetes mellitus complications](#).

Some studies have shown that separate administration of vascular endothelial growth factor ([VEGF](#)) or stromal cell-derived factor 1 α (SDF-1 α) exhibited a therapeutic effect in promoting angiogenesis in the wound healing process. In a study of Long et al., a [collagen membrane](#) is prepared as a drug delivery scaffold to investigate whether combined administration of SDF-1 α and VEGF has a synergistic therapeutic effect on diabetic wound healing. We specifically fused a collagen-binding domain (CBD) with SDF-1 α and VEGF separately, and sustained release of the two recombinant proteins from the collagen scaffold is successfully observed. Meanwhile, when a CBD-VEGF and CBD-SDF-1 α co-modified scaffold is implanted in a diabetic rat skin wound model, it not only shows a synergistic effect in facilitating angiogenesis but also reduces inflammation in the short-term. Moreover, long-term results reveal that the co-modified scaffold is also able to enhance rapid wound healing, promote blood vessel regeneration, and assist cell proliferation, re-epithelialization and extracellular matrix accumulation. Taken together, our study indicates that the CBD-VEGF and CBD-SDF-1 α co-modified scaffold helps in quick recovery from diabetic wounds by coordinating angiogenesis and inflammation ¹⁾.

¹⁾

Long G, Liu D, He X, Shen Y, Zhao Y, Hou X, Chen B, OuYang W, Dai J, Li X. A dual functional collagen scaffold coordinates angiogenesis and inflammation for diabetic wound healing. Biomater Sci. 2020 Oct 7. doi: 10.1039/d0bm00999g. Epub ahead of print. PMID: 33025970.

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