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Pro-angiogenic and wound healing potential of baicalein: *In vitro*, *in ovo* and *in silico* evaluation

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Angiogenesis is critical for the repair of damaged or diseased tissues. Hypoxia is a major factor promoting angiogenesis in physiological conditions. Baicalein, a flavone derived from the Chinese skullcap or Huangqin, *Scutellaria baicalensis* Georgi which is known to exhibit hypoxia mimetic activity. Here, we investigated the pro-angiogenic and wound healing potential of baicalein *in vitro*, *in ovo*, and *in silico* with a view to develop green wound dressings. The human keratinocyte cell line, HaCaT, was subjected to baicalein at varied concentrations *in vitro* and assessed for cell viability, cell cycle, and apoptosis induction. The study showed that lower concentrations of baicalein (below 10 μ M) promoted HaCaT proliferation, while higher concentrations induced apoptosis. Baicalein at low concentrations also promoted angiogenesis, as evidenced by the CAM (Chorioallantoic membrane) assay performed on chicken eggs. Gene expression analysis of Keratin 10 also suggested the activation of keratinocytes, leading to augmented wound healing after baicalein treatment. The *in silico* docking experiments reflect the potential of baicalein to promote angiogenesis via a HIF-independent pathway involving the agonistic transcriptional activation of the ERR α -PGC1 α complex. The results highlight the capability of baicalein to promote angiogenesis and wound healing and thus hold potential for the development of angiogenesis-promoting scaffolds and wound dressings.

Keywords: Angiogenesis, Chinese skullcap, Docking, Huangqin, Hypoxia, *Scutellaria baicalensis*

Cutaneous wound healing is a vastly dynamic and inducing factors are the vascular endothelial growth