

The Multi-facet Characteristics of a TCM Phytochemical, Shikonin, on Immune Modulation, Tissue-wounding and inflammation.

Ning-Sun Yang, Shu-Yi Yin, Hui-Ming Chen.

ABRC, Academia Sinica. Taipei.

Shikonin, a phytochemical derived from *Lithospermum erythrorhizon* (LE), has been shown to exhibit various biological and pharmacological activities, including anti-oxidant, wound-healing, anti-inflammatory and anti-tumor properties. Previously, we have demonstrated that shikonin can confer a strong suppressive effect *in vivo* on expression of TNF- α gene at the promoter level in skin tissue. It can also exhibit a strong modulatory effect on TNF- α pre-mRNA splicing in human monocytes. Moreover, our recent findings suggest that topical treatment with shikonin can confer a potent *in vivo* stimulatory effect on epithelial-mesenchymal transition (EMT) activity and suppress the expression of the associated microRNAs in skin tissues. These findings suggest that the various pharmacological properties of shikonin may be closely related to each other, and can result in a multi-functional and hierarchical effect on a spectrum of signaling genes at the genome and cellular differentiation levels. For potential clinical application, our laboratory also evaluated the potential adjuvant effect of shikonin on cancer vaccines. The use of shikonin-derived tumor cell lysates for pulse of dendritic cells is providing a new *ex vivo* approach for developing individualized, dendritic cell-based cancer vaccines through activating immunogenic cell death of targeted tumor cells. These results will be discussed. Taking together, we consider our findings are providing supportive evidence for a spectrum of traditional Chinese medicine (TCM) findings on wound-healing and immune-modulatory activities of shikonins. Our finding may also be useful in contemplating new strategies for modernized clinical use of shikonins, as an efficient adjuvant in gene- or DC-based cancer vaccines or therapeutics.