

梁家華老師



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**Mechanisms and preclinical efficacy and safety of herbal medicine,
Solanum incanum, in the treatment of squamous cell carcinoma**

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SR-T100® is a new patented product extracted from the herbal medicine, *Solanum incanum*, and is currently executing phase II clinical trial in Taiwan for actinic keratosis and Bowen's disease. Its mainly active compound is solamargine alkaloid. The purpose of the study was to investigate the pathways leading to cell death of SCC cell lines, and also the efficacy of topical SR-T100® gel in the treatment of UVB-induced hairless mouse SCC.

The cancer cell death was evaluate by morphological observation, cell cycle analysis, change of gene expression by RT-PCR and immunoblot, fluorescent immunocytochemistry, and DNA electrophoresis for DNA fragmentation. For mouse SCC, we performed TUNEL and active caspase-3 staining before and after topical SR-T100® gel therapy.

The results demonstrated chromatin condensation, DNA fragmentation, and sub-G1 peak in a DNA histogram of human epithelium carcinoma (A431), human SCC4, SCC9 and SCC25, and human kerationcytes (HaCaT) cells, and the action is dose- and time-dependent. SR-T100 increases the binding activities of FasL and tumor necrosis factor- α (TNF- α) to the caner cells, and up-regulates Fas and TNFRs expressions and their subsequent FADD/TRADD signal cascades. In addition, SR-T100 triggers mitochondria-mediated pathways, release of cytochrome *c*, down-expression of Bcl-xL, up-regulation of Bax, and increase of caspase-3 activity.

Furthermore, 35 of 40 UVB-induced hairless mouse SCCs disappeared within 10 weeks after 10 weeks of once-daily application of topical SR-T100[®] gel without obvious side effects.

Our observations suggest that SR-T100[®] induce apoptosis of SCC via death receptor and mitochondria pathways. The SR-T100[®] gel may become a possible candidate as a potential alternative therapeutic for SCC, and its precursors, actinic keratosis and Bowen's disease in the future.

Keywords: SR-T100[®], Actinic keratosis, Bowen's disease, Apoptosis.