Effect of Elevated Levels of Epidermal Thymic Stromal Lymphopoietin on Skin Tumorigenesis

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Thymic Stromal Lymphopoietin (TSLP) is a cytokine mediated in T helper 2 (Th2) cell immune responses. In published literature, increased levels of TSLP have been shown to promote tumor growth in breast and pancreatic cancer via promotion of Th2 inflammation. However, in studying animals with Notch signaling deficiency in the skin, our lab saw that the high levels of TSLP released by their epidermis cause a tumor protective phenotype. Therefore, the purpose of this project was to investigate the role of high TSLP levels in the skin. We have demonstrated that this tumor protective phenotype, in Notch deficient skin, is caused by TSLP and is mediated through CD4+ T cells. Furthermore, we analyzed the effects of TSLP overexpression in wild-type skin. This was done using a topical application of calcipotriol, a vitamin D analog, to induce epidermal TSLP expression in wild-type mice. These mice were then subjected to a standard skin chemical carcinogenesis protocol. Results from these experiments show that TSLP overexpression prevents skin tumorigenesis in wild type mice as well. These findings show that TSLP may have the potential to be used as a novel anti-cancer therapeutic agent.