

Oren H. Bognar

New Orleans Charter Science and Mathematics High School
LSU Health Sciences Center, New Orleans, LA

Kelly Jean Sherman, PhD

LSUHSC, Department of Department of Pharmacology and Experimental Therapeutics

“TNF- α Concentration Curve Effect on Oral Squamous Cell Carcinoma In Vitro”

BACKGROUND: Metastasis, the spread of cancer cells from their origin to other places in the body, is a defining characteristic of malignant tumors and a leading cause of cancer-related death. This process involves cancer cells invading nearby tissues, entering the bloodstream or lymphatic system, surviving in circulation, and establishing secondary tumors in distant locations making another cancer site. Understanding and effectively managing metastasis are crucial in improving cancer treatment and advancing research. Tumor Necrosis Factor-alpha (TNF- α), a pro-inflammatory cytokine, plays a critical role in immune responses by regulating inflammation, apoptosis, and cell survival. Research with other cancer cells suggests that TNF- α can affect cancer cell migration. CAL27 and UPCI: SCC090 are types of oral cancer originating in the tongue, SCC090 is positive for Human Papilloma Virus (HPV).

OBJECTIVES: Observation of TNF- α effect of squamous cell carcinoma motility rate.

METHODS: A wound-healing assay is a laboratory technique used to investigate cell motility and invasion capabilities. Widely utilized in cancer research, migration assays assess metastatic potential, treatment effects, and the mechanisms of cell motility. We designed a concentration curve, with TNF- α concentrations of 0, 1.0, 10.0, 14.4, 50.0, 100.0 mg/ml across a 0, 6, 24, 48-hour periods.

RESULTS: Over a 24-hour period, TNF- α concentration had no significant effect on Cal 27 cells, but significantly lowered proliferate of SCC090 at concentration: 0.0, 1.0, 14.4, 50.0, 100.0 ng. Preliminary experiment on TNF- α effect on motility rate of Cal 27 and SCC090 showed an overall lower rate of motility of SCC090 than Cal 27 over a 24-hour period with no statistical analysis performed due to low number of samples.