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“In Vitro Comparison of Oral Squamous Cell Carcinoma, HPV-positive and HPV- negative”

Oral squamous cell carcinoma (OSCC) is a type of skin cancer that affects the oral cavity. It is characterized by red or red and white, rough lesions. The etiology of OSCC includes use of tobacco products, heavy alcohol usage, and natural and artificial sun exposure over a significant amount of time. Human papillomavirus (HPV) is one of the most common sexually transmitted diseases. HPV is spread through skin-to-skin contact. While HPV has many strains that affect the reproductive systems, this infection can also develop in the mouth and on the tongue. HPV can potentially lead to the development of OSCC. Screening for OSCC for HPV-positive and HPV-negative is now becoming standard practice, and recent studies suggest that patients that are diagnosed with HPV-positive OSCC have a better prognosis than patients diagnosed with HPV-negative OSCC. Based on these current trends, it is important to investigate the differences between OSCC HPV-positive and HPV-negative for future treatments and disease prevention. To observe these differences, the studies compared two OSCC cell lines: HPV-negative Cal-27 cells and HPV-positive SCC090 cells. Based on current National Cancer Institute data on OSCC HPV-negative and OSCC HPV-positive prognosis, it was hypothesized that HPV-negative cell line Cal-27 would confer a growth advantage when compared to HPV-positive cell line SCC090. Qualitative and quantitative experiments were conducted over three days that included observation of cell growth morphology, cell counting, proliferation, and wound-healing assays.

Cal-27 and SCC090 cells were seeded at different densities in six and 96 well plates. Morphology observations and cell counting growth curves were recorded from six-well plates seeded at 5×10^5 , 1×10^6 , and 2×10^6 over a three-day period. A MTT proliferation assay was performed on cells seeded at a 2.5×10^5 density. The wound healing assay was performed in six-well plates with cells seeded at a 1×10^6 density. The motility rate was recorded over a 24-hour period for each cell type. The results showed that the SCC090 cells grow in a mound-like form, and after three days at a higher cell density, they appeared to begin to grow on top of each other; in contrast, the Cal-27 cells maintained a monolayer confluency. The Cal-27 cells had a significant growth increase compared to SCC090 cells after three days, and after 24-hours, the Cal-27 cells had a significantly greater rate of motility than SCC090 cells.