J Cancer Sci Ther 2018, Volume 10
DOI: 10.4172/1948-5956-C1-124

Role of EGFR inhibitors in oral cancer cell migration

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Epithelial to mesenchymal transition (EMT) is the process by which cells change shape from being tightly connected epithelial cells to more motile mesenchymal cell. EMT has been reported to facilitate cell migration. Cell motility is an initial first step on the road to metastasis. Epidermal growth factor receptor (EGFR) has been reported to be overexpressed in oral cancer and is often related with poor prognosis. Epidermal growth factor (EGF) and transforming growth factor (TGFα) are ligands that bind to EGFR and can affect different cellular process such as proliferation, migration, apoptosis, etc. In this project, cell proliferation, migration, morphological change and EMT makers for HSG, AZA1, HaCaT and TYS were measured by using several techniques like cell counting, scratch assay, photographic image capturing and immunofluorescence. A number of concentrations of EGF and TGFα (1 ng/ml, 10 ng/ml and 50 ng/ml) were incubated for different times. We established that 10 ng/ml and 50 ng/ml induced morphological change (EMT like phenotype with finger-like projections) and increased migration while there was no difference in cell proliferation. The morphological changes were completely blocked by 1-hour pre-treatment with Gefitinib (EGFR tyrosine-kinase inhibitor), Erlotinib (EGFR TK-inhibitor) and PD (MAPK inhibitor).

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