114 學年度牙醫學系大學生暑期研究計畫 研究題目與研究摘要

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題目二

中文題目：低氧條件下，Arecoline 對口腔鱗狀細胞癌細胞株存活率及 EMT 標誌蛋白表現之影響

英文題目：Effect of Arecoline Treatment on Cell Viability and EMT Marker Expression of Oral Squamous Cell Carcinoma Cells under Hypoxia

中文摘要

本研究旨在探討 Arecoline 於不同氧氣條件下對口腔鱗狀細胞癌（OSCC）細胞株存活率及上皮-間質轉化（EMT）標誌蛋白表現的影響。Arecoline 為檳榔主要成分，與口腔癌形成具高度相關性，然而其於低氧微環境中的作用機制尚未明確。本研究將使用 SCC-25 或 Ca9-22 細胞，分別於一般氧氣環境（21% O_2）及低氧環境（1% O_2）下培養，並施加不同濃度之 Arecoline 處理。細胞存活率將以 CCK-8 assay 測定，EMT 相關蛋白（E-cadherin、Vimentin 及 Snail）表現量則以 Western blotting 分析。預期結果可比較 Arecoline 於不同氧氣條件下對細胞侵襲性轉化之影響，並揭示低氧微環境在檳榔相關口腔癌致癌過程中的潛在促進角色。

英文摘要

This study aims to investigate the effects of arecoline under different oxygen conditions on the viability and epithelial-mesenchymal transition (EMT) marker expression of oral squamous cell carcinoma (OSCC) cell lines. Arecoline, a major alkaloid of areca nut, has been strongly associated with oral carcinogenesis, but its mechanisms under hypoxic microenvironments remain unclear. In this study, SCC-25 or Ca9-22 cells will be cultured under both normoxic (21% O_2) and hypoxic (1% O_2) conditions, and treated with various concentrations of arecoline. Cell viability will be measured using the CCK-8 assay, and the expression levels of EMT-related proteins (E-cadherin, Vimentin, and Snail) will be analyzed via Western blotting. The study is expected to compare the effects of arecoline between different oxygen environments and to elucidate the potential role of hypoxia in promoting areca-associated carcinogenic transformation of oral cancer cells.