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*Asia-Pacific Journal of Molecular Medicine 2017, 7 (SUPP 1)*

**Abstracts for 7th Regional Conference on Molecular Medicine (RCMM)**

**in Conjunction with 3rd National Conference for Cancer Research 2017**

**10-12th November 2017, Auditorium UMBI, Kuala Lumpur**

**Point mutations effect on E6 and E7 genes of HPV16: In silico approach**

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**ABSTRACT**

Human papillomaviruses (HPV) are associated with oral squamous cell carcinoma. There are high-risk (HR) (e.g. HPV16, HPV18) and low-risk (LR) (e.g. HPV6, HPV11) HPV types. The E6 and E7 oncoproteins inactivate p53 and pRb respectively and promote cell proliferation. This study aims to reveal the biological impacts of point mutations on specific amino acid sequences encoded for E6 and E7 of HPV16 with oral cancer progression. This retrospective study primarily involved bioinformatics approached. HPV16 E6 and E7 oncoprotein sequences were retrieved from NCBI database and their 3D protein structure templates from Protein Databank (PDB). 3D protein structure models were constructed by using SWISS MODEL tools. The structural visualization and comparison made by using RasMol and DeepViewer. The biological impacts due to mutations and structural changes were further studied by reviewing current scientific articles. E6 and E7 oncoproteins of HPV16 have significant roles in HPV-associated oral cancer which are best known for their ability to bind and inactivate the tumour suppressor proteins, p53 and retinoblastoma (pRb), respectively As a consequence, p53 and pRb growth arrest and apoptosis-inducing activities are abrogated. This study successfully designed E6 and E7 oncoprotein 3D models based on fourteen point mutations recently reported. Mutated E6 oncoprotein with the range of root mean square deviation (RMSD) value, 0.00-0.01Å exhibits increased in trimetric complex formation and later increasing p53 degradation. In addition, impairment in ternary complex formation and p53 degradation revealed slightly wider range of RMSD value, 0.02-0.03Å. Mutated E7 oncoprotein with range of RMSD value, 0.00-0.04Å shows increased in binding and degradation of pRb. Point mutations present on E6 and E7 oncoproteins altered their protein structures and binding capacity to p53 and pRb, respectively. These changes affect the transformational potential of HPV16 in oral cancer progression.