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Innovation in clinical research technologies and software systems: Mir-208a/b can be a potential drug target in regulation of cell proliferation and apoptosis in oral squamous cell carcinoma-first report

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Introduction: Although substantial advancement has been achieved in the techniques and therapies related to oral squamous cell carcinoma (OSCC). Still, there is requisite for the novel approaches to reveal the various pathways and their regulators to treat the disease. We aim to find out key genes and miRNAs involved in positive regulation of cell proliferation and negative apoptosis.

Method: To analyze the genes, differentially expressed OSCC genes were obtained from various published papers and databases. Gene ontology (GO) was done using STRING v 10 to obtain genes involved in cell proliferation (CP) and apoptosis (AP) and their positive (+ve) and negative (-ve) regulations. Experimentally validated miRNA-target interactions (MTIs) were retrieved from miRTarBase. The target genes of miRNAs were predicted through utilizing tools TargetScan. Key miRNAs and genes were identified for cell proliferation, positive regulation cell proliferation and negative regulation of apoptosis using Cytoscape 3.3.0.

Results: Twenty four genes were found to be regulating CP+ve and AP-ve. Micronome of CP, AP and its +ve and -ve regulator revealed 11 common miRNAs (miR-379-5p, miR-106b-3p, miR-208b-3p, miR-208a-3p, miR-504-5p, miR-33a-3p, miR-328-3p, miR-376c-3p, miR-197-3p, miR-496 and miR-758-3p). The direct target of these miRNAs were EDN1, HSPA5; HIF1A, NFE2L2; CDKN1A; CDKN1A, ETS1; MDM2; RARB, GSK3B; SFRP1; DAPK1, TGFA; IL18; MDM2 and MDM2 respectively. Gene Ontology based network of CP, CP+ve and AP-ve revealed CDKN1A as key regulator of these pathways. The Target Scan showed direct miRNA-mRNA interactions of mir-208a-3p and mir-208b-3p with CDKN1A.

Conclusion: miR208a/b-3p controls both positive regulation of cell proliferation and negative regulation of apoptosis via CDKN1A gene which are potential candidate for drug targets in OSCC.

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The influence of resilient liner and clip attachments for bar-implant retained mandibular over-dentures on opposing maxillary ridge: A 5-year randomized clinical trial

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This study aimed to compare the influence of resilient liner and clip attachments for bar-implant retained mandibular over-dentures on opposing maxillary ridge after 5 years of denture wearing. Thirty edentulous male patients received 2 implants in the anterior mandible after being allocated into 2 equal groups using balanced randomization. After 3 months, implants were connected with resilient bars. New maxillary complete dentures were then constructed and mandibular over-dentures were retained to the bars with either clips (group I, GI) or silicone resilient liners (group II, GII). The prosthetic and soft tissue complications of the maxillary dentures were recorded 6 months (T6m), 1 year (T1), 3 years (T3) and 5 years (T5) after over-denture insertion. Traced rotational tomograms were used for measurements of maxillary alveolar bone loss (R). Change in R immediately before (T0) and after 5 years (T5) of over-denture insertion was calculated. Maxillary denture relining times and frequency of flabby anterior maxillary ridge occurred significantly more often in GI compared to GII. The change of R in anterior part of maxilla was significantly higher than change of R in posterior part in both groups. GI showed significant resorption of anterior residual ridge compared to GII. Relining times and frequencies of flabby ridge were significantly correlated with change in R. Within the limitations of this study, resilient liner attachments for bar-implant retained mandibular over-dentures are associated with decreased resorption and flabbiness of maxillary anterior residual ridge and fewer maxillary denture relining times when compared to clip attachments.

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