

Abstract submission for 4th Annual UTRGV SOM Research Symposium: International Conference on Cancer Health Disparities

Research abstract

Title: Natural remedies to combat aberrant hallmark signatures including altered glycosylation in oral carcinoma

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Abstract

Background: Tobacco associated oral cancers remain a major concern in India with higher incidence and mortality making it an Indian-centric burning issue. To combat this dreadful disease, we investigated effects of certain natural compounds on the hallmark signatures including glycosylation transcripts levels in oral carcinoma.

Methods: The tongue carcinoma cells- SAS cells were treated with tobacco compounds, natural compounds and Cisplatin. RNA was isolated from the cells and converted to cDNA. RT-qPCR was performed to evaluate expression levels of various genes.

Results: The treatment of tobacco compounds resulted in similar pattern of altered makers (ST3GAL1, NEU3, FUT5, FUT6, MMP2, BCL2) as observed in tobacco habituated patients. The treatment of Curcumin resulted in down regulation of FUT8 and MMP2 which are known to have a significant association with disease progression and metastasis. Furthermore, Curcumin treatment also resulted in up regulation of the good prognostic glycosylation transcript marker i.e. FUT3 showing its protective effect against the tumor invasion and metastasis. Butein treatment resulted in the down regulation of the worst prognostic indicators i.e. FUT8 and MMP2 in a dose dependent manner. Piceatannol treatment showed better protective effects via down regulation of the markers related to the aggressive disease progression (ST3GAL2, FUT5, FUT8, MMP2, VEGFC).

Conclusion: The study provides novel approach of targeting aberrant hallmark signatures including glycosylation with natural compounds which may open the possibility of promising therapeutic strategies using natural compounds alone or in combination with other conventional therapies to alleviate the present scenario of this dreadful disease in India.