

Effect of glutamine on TGF-beta 1 in oral mucositis

Fatma E.A. Hassanein *

Department of oral medicine, periodontology, and oral diagnosis, King Salman International University, South Sinai, Egypt

AIM or PURPOSE: This study aimed to evaluate the effect of glutamine oral suspension on salivary levels of transforming growth factor beta 1 (TGF- β 1), and the severity of RIOM in HNC patients. This is the first study to investigate the impact of glutamine on TGF- β 1 levels in HNC patients with RIOM.

MATERIALS and METHOD: This was a randomized controlled trial (RCT) with 50 HNC patients who were divided either into the test group (glutamine oral suspension) or the control group (maltodextrin oral suspension). RIOM was assessed according to WHO Oral Toxicity Scale, Oral mucositis assessment scale (OMAS), Pain visual analog scale (Pain-VAS), the incidence of opioid use, Body mass index (BMI), and salivary level of TGF- β 1.

RESULTS: The study included 40 patients (placebo n = 20; glutamine n = 20) who completed RT for the completers' analysis. Based on multivariate analysis, glutamine has been observed to significantly reduce levels of salivary TGF- β 1. Additionally, it has been found to decrease the scores on the WHO oral toxicity scale, OMAS, and Pain-VAS. The use of glutamine also lessened the need for opioids and contributed to a reduction in BMI.

CONCLUSION(S): Glutamine may modulate the inflammatory response and enhance wound healing in RIOM by targeting decrease of salivary TGF- β 1 levels. These findings support the use of glutamine as a potential intervention for RIOM and nutritional support for improving radiation sensitivity.

<https://doi.org/10.1016/j.identj.2024.07.162>

Toxic metal analysis of Sri Lankan Areca catechu varieties

Yovanthi Anurangi Jayasinghe ¹, Prasangi Peiris ¹, Roshan Pradeep ², Shalindu Malshan Jayawickrama ², Kalpani Senevirathna ², Nadisha Piyarathne ³, Thiloka Chandima Ariyasena ⁴, Nadeeka U. Jayawardena ⁵, Lalith Jayasinghe ⁶, Rohan Weerasooriya ⁶, Ruwan Jayasinghe ^{1*}

¹ Department of Oral Medicine and Periodontology, Faculty of Dental Sciences, University of Peradeniya, Peradeniya, Sri Lanka; ² Center for Research in Oral Cancer, Faculty of Dental Sciences, University of Peradeniya, Peradeniya, Sri Lanka; ³ Center for Research in Oral Cancer, Department of Basic Sciences, Faculty of Dental Sciences, University of Peradeniya, Peradeniya, Sri Lanka; ⁴ Department of Chemistry, Faculty of Science, University of Peradeniya, Peradeniya, Sri Lanka; ⁵ Department of Agricultural Biology, Faculty of Agriculture, University of Peradeniya, Peradeniya, Sri Lanka; ⁶ National Institute of Fundamental Studies, Hanthana Road, Kandy (20000), Sri Lanka

AIM or PURPOSE: Oral cancer has become a major health burden in Sri Lanka and one major risk factor is Betel quid chewing. *Areca catechu* is one of the carcinogenic substances in the betel quid. There are multiple varieties and

preparations available in Sri Lanka, and data on the composition of these are not available. Thereby this study was carried out to identify and compare the heavy metal content of different varieties and preparations of *A. catechu* in Sri Lanka.

MATERIALS and METHOD: Ethical clearance was obtained from the Ethics Review Committee, Faculty of Dental Sciences, University of Peradeniya, Sri Lanka (ERC/FDS/UOP/2022/27). Powdered six varieties (S1, S2, S3, S4, S5 and S6) of *A. catechu* were subjected to different preparation methods (fresh, water fermented and sundried). Water extracts of each preparation were introduced to microwave-assisted digestion. The toxic metal content (Zn, Pb, Cr, Ni, Cu, Fe, Mn, Cd, Al) were analyzed by ICP-OES.

RESULTS: Zn, Cr, Ni, Cu, Fe, Mn and Al were detected in all the six varieties. Cd and Pb were only detected from sundried S2 variety. Of each variety the toxic metal content in the sundried *A. catechu* were almost high compared to fresh and water fermented *A. catechu*. Likewise, the metal content of the water fermented *A. catechu* were almost high compared to the fresh *A. catechu*.

CONCLUSION(S): Exposure to these toxic metals can disrupt molecular signaling pathways, potentially leading to carcinogenesis. Further studies are needed to understand the intracellular processes induced by exposure to toxic metals, particularly from *A. catechu*.

<https://doi.org/10.1016/j.identj.2024.07.163>

Effect of Mesenchymal Stem Cells injection on Salivary Glands

Caroline Massieh ^{1*}, Reham Magdy Amin ¹, Medhat El Zainy ², Iman Fathy ²

¹ Department of Oral Biology, The British University in Egypt, Cairo, Egypt; ² Department of Oral Biology, Ain Shams University, Cairo, Egypt

AIM: The aim of this study was to evaluate the possible regenerative effect of bone marrow mesenchymal stem cells (BMSCs) over time on damaged salivary glands through systemic injections.

MATERIALS-METHOD: 38 male Albino rats were randomly divided into 4 groups: Group 1: 10 rats received 0.5 ml of phosphate-buffered saline (PBS) by injection. Group 2: 14 rats received an intraperitoneal injection of 5-Fluorouracil (5-FU) anti-cancerous drug. Group 3: 14 rats were injected the same dose of 5-FU then received an intravenous injection of BMSCs suspended in 0.5 ml of PBS via the tail vein at day 1 after 5-FU administration. Five rats of group 1 and seven rats of each of groups 2 and 3 were sacrificed at days 6 and 10 after 5-FU or PBS administration.

RESULTS: Histological examination showed that group 2 showed features of severe degenerative changes which increased over time. Group 3 showed increasing amelioration in the ductal structure overtime. Immunohistochemical results revealed improvement in group 3. **CONCLUSION(S)** Histological and immunohistochemical features revealed statistically significant amelioration in regenerative potentials of group 3 compared to group 1.

<https://doi.org/10.1016/j.identj.2024.07.164>