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Oral and Maxillofacial Surgery Section Award

JOMSMP award 2022

Best Paper Award

Virucidal activity of oral care products against SARS-CoV-2 in vitro

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Abstract

Objective: Coronavirus disease 2019 (COVID-19) caused by infection by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has spread worldwide. Since reducing the amount of virus in saliva is considered to prevent broader infection, the Center for Disease Control (CDC) and American Dental Hygienists’ Association (ADHA) have recommended use of CPC- or CHX-containing oral care products before the dental procedure. However, there is no certified evidence. So, we examined inactivation of SARS-CoV-2 by oral care products in several countries in vitro.

Methods: 0.05% Cetylpyridinium chloride (CPC) mouthwash, 0.05% CPC toothpaste and 0.30% CPC spray in Japan; 0.06% chlorhexidine gluconate (CHX) + 0.05% CPC mouthwash and 0.12% CHX + 0.05% CPC mouthwash in Europe; 0.075% CPC mouthwash, 0.12% CHX mouthwash, and 0.20% delmopinol hydrochloride mouthwash in the USA; and 0.04% CPC mouthwash in China were assessed for virucidal activity with ASTM E1052.

Results: The virus was inactivated in vitro by the contact time in directions for use of all oral care products containing CPC or delmopinol hydrochloride as antiseptics.

Conclusions: These results suggest that these oral care products in each country may reduce the viral load in the mouth.

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Oral and Maxillofacial Surgery Section Award

Comparative study for closure methods of maxillary defects after maxillectomy, a free flap versus a maxillary obturator

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Abstract

Objective: Reconstruction with a free flap after maxillectomy is not unified, and reconstruction techniques are applied according to the surgeon’s preference. The present study evaluated patient characteristics (sex and age), clinical factors (operation time, bleeding volume, hospitalization, number of remaining maxillary teeth, maxillary defect), and quality of life of patients after surgery who did or did not undergo reconstruction at the time of resection of maxillary malignant gingival tumors.

Methods: We conducted a retrospective case control study. The patient sample consisted of 38 patients who underwent maxillectomy as maxillary gingival malignant tumor ablative surgery between 2007 and 2018. Thirteen patients received reconstruction with a free flap (reconstruction group) and 25 patients received reconstruction with an obturator (non-reconstruction group). Quality of life was assessed using the University of Washington Quality of Life questionnaire (UW-QOL) for patients who were able to respond. There were seven valid responses in the reconstruction group and seven valid responses in the non-reconstruction group. Differences in questionnaire items between groups were evaluated using the Mann–Whitney U test.

Results: The reconstruction group had significantly longer operation time, larger bleeding volume, and longer hospitalization time than the non-reconstruction group (P < 0.05 for all). However, no significant differences were observed in UW-QOL questionnaire items between the two groups.

Conclusion: This study showed that there was no significant difference in postoperative patient QOL between reconstruction and non-reconstruction following maxillectomy.

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Oral Medicine Section Award

Fungicidal activity of grapefruit seed extract against the pathogenic Candida species causing oral candidiasis

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Abstract

This study aimed to evaluate the antifungal activity of grapefruit seed extract (GSE) against Candida species and to confirm the biological safety. Two-fold serial dilutions of GSE or miconazole were prepared. Cell suspensions of Candida albicans, Candida glabrata, Candida tropicalis, or Candida parapsilosis were added to each diluted solution, and the minimum inhibitory concentration (MIC) and minimum fungicidal concentration (MFC) were determined. The MFC/MIC ratio was
calculated to determine whether the substance had a fungistatic or fungicidal activity. Each Candida species treated with GSE were examined using a scanning electron microscope (SEM) and fluorescence microscopy. The effect of GSE on EpiOral™, a three-dimensional tissue model, was assessed by tissue viability assay and histological analysis. GSE was applied to the mandibular gingiva of Japanese white rabbits, and the gingival tissues were histopathologically assessed. GSE demonstrated a fungicidal effect against all tested Candida species, whereas miconazole demonstrated a fungicidal effect against only C. albicans. SEM images showed various cell damage patterns in GSE-treated Candida cells. Fluorescence microscopy revealed that almost all Candida cells were killed by GSE-treated. EpiOral™ treated with GSE showed no effect on the tissue viability and there was no remarkable difference between GSE and control groups in the histological analysis. The histopathological observation in the oral mucosa treated with GSE showed no significant histopathological changes. Taken together, GSE has a fungicidal activity against C. albicans, C. glabrata, C. tropicalis, and C. parapsilosis, and no adverse effects were observed in vitro and in vivo.

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Oral Pathology Section Award

Leaf Extract of Osbeckia octandra L. (Heen Bovitiya) Suppresses Human Oral Squamous Cell Carcinoma Cells Migration and Induces Cellular DNA Damage

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Abstract

Objective: The study was designed to investigate the anti-cancer potential of Osbeckia octandra leaf extract using an in vitro cell culture model with YD-38 oral carcinoma cells.

Methods: Human oral squamous cell carcinoma (OSCC) cells, YD-38 were cultured until sub-confluency and treated with 3 different concentrations (0.3, 3.0 and 30 μg/mL) of freeze-dried water extracts of O. octandra leaves. The effects of the extract on cell viability, migration and DNA damage were assessed.

Results: The O. octandra concentrations dose and time dependently reduced cell viability. The significantly highest response was observed at 30 g/mL of concentration (p < 0.05) and significantly reduced cell migration was observed with the exposure to 30 μg/mL at 6 h, 12 h and 24 h of incubation (p < 0.05). Furthermore, the cellular DNA damage was significantly increased with the concentration gradient whereas the highest effect was observed at 30 μg/mL for 48 h incubation (p < 0.05).

Conclusion: The O. octandra leaf extracts clearly demonstrates an in vitro anti-cancer potential and it can be primarily via the reduction of cell migration and induced cellular DNA damage rather than direct cytotoxicity. Reduction of cell migration potential and DNA damage induction are a vital for inducing the apoptosis of the OSCC. Thus, present data warrant in-depth study to identify the exact bio-active components to establish an effective anti-cancer therapy from O. octandra against oral carcinoma.

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