Cold plasma jets found useful against oral bacteria

German scientists release promising results for dental applications

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LEIPZIG/HOMBURG, Germany: The use of cold plasma jets could soon improve antibacterial treatment measures in dentistry, results released by a team of German experts indicate. Recent data gathered by scientists from the Leibniz Institute for Surface Modification in Leipzig and the Saarland University Dental Hospital in Homburg has demonstrated increased effectiveness of atmospheric plasma for the treatment of tooth surfaces and infected oral tissue. Amongst other applications, the technology could significantly improve the treatment of oral diseases, the researchers told Dental Tribune.

Cold plasma jets are ionised local gas flows that are triggered by microwaves in plasma jet sources using inert gases, such as argon, helium or nitrogen. Adding those gases under normal atmospheric pressure produces reactive oxygen species that react with surfaces and are capable of changing it.

Currently, hot plasma jets are used in an increasing number of medical applications, including disinfecting surgical instruments. Their high temperatures, however, have prevented them from being used for the treatment of body tissue.

According to Dr Stefan Rupf, the lead researcher from the Saarland University Dental Hospital, the application of cold plasma jets will allow significantly smoother treatment compared to mechanical removal with dental instruments. “Dental pulp in the centre of the tooth is linked to blood supplies and nerves; therefore, heat damage must be avoided at all costs,” he said. “The low temperature of the cold plasma jets means they can kill the microbes while preserving the tooth.”

The study, which won an award in the Competition for Innovation in Medicine Technology in 2006, was funded by the German Federal Ministry of Education and Research. The results were published in the February issue of the Journal of Medical Microbiology.

Sensitive teeth plague India

Cases of sensitive teeth have tripled over the last five years, a nationwide survey in India has found. The findings released by the Indian Dental Association earlier this year also indicate that only 19 per cent of Indians suffering from dentine hypersensitivity visited a dentist to diagnose and treat the condition. Most of these cases occurred in the age group of 50 to 40 years.

Dentine hypersensitivity is recognised as a common dental condition and has been referred to as the ‘common cold of dentistry’. It is caused by dentine exposure through gingival recession, or the loss of enamel or periodontal tissue resulting from mechanical pressure or chemical forces such as teeth whiteners. Treatment options include blocking neural transmission at the pulp through desensitising toothpaste.

China’s largest hospital expands

The Beijing Stomatological Hospital, one of the largest dental hospitals in China, will be moved from its current location near the Temple of Heaven to the Fengtai District. City officials said that the new venue will be five times larger and increase the hospital’s bed capacity to over 200.

Spore increases med contributions

The Health Minister of Singapore has announced that the Ministry will increase its contribution to the country’s national medical savings scheme from 6.5 to 9 per cent. The 25-year-old MediSave is intended to cover major hospitalisation. Recently, it has been expanded to include a number of out-patient benefits.

Make no bones about implants

Bone loss around dental implants is far more common than previously thought, a doctoral study at the Sahlgrenska Academy at the University of Gothenburg in Sweden has revealed. The study, which examined X-rays of over 600 implant patients, found that about one quarter had lost some degree of supporting bone around their implants. The more jaw implants a patient had, the more common it was to find loss of supporting bone, the thesis states.

The study also demonstrated that the bone loss was not linear but accelerated with time. Furthermore, soft tissues surrounding an implant with bone loss were often found to be inflamed.

Dental implant companies are investing heavily in the development of new materials and coatings that increase osseointegration and prevent significant bone loss. Latest research has shown that “smart coatings” that include hydroxyapatite encourage bone growth around implants.

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