New coating prevents bacterial growth on dental appliances

By DTI

SEOUL, South Korea: According to the American Association of Orthodontists, more than five million people seek orthodontic treatments each year in the US and Canada alone. Therapy includes fixed orthodontic appliances and aligners, whose materials are prone to bacterial contamination. However, researchers from Yonsei and Kyung Hee universities in Seoul have now reported that they have developed a film that reduces bacterial growth on dental appliances.

Researchers at the University of Otago have highlighted the poor oral health of people with dementia living in aged residential care in New Zealand. (Photograph: vvoe/Shutterstock)

Bacteria frequently build up on clear aligners or retainers, which also suffer from poor abrasion resistance. The researchers set out to develop a simple and affordable coating to combat this issue. They drew inspiration from super-hydrophilic antibacterial coatings on other medical devices in order to see if they could develop something similar for plastic appliances in the oral environment.

The researchers layered films on a polymer sheet modified with glycol (PEG). This layered film created a super-hydrophilic surface that prevented bacteria from adhering, resulting in a 75 per cent reduction in bacterial growth between coated PETG and the bare material. The coated plastic was also stronger and more durable, even when tested with artificial saliva and various acidic solutions.

The study, titled “A polysaccharide-based antibacterial coating with improved durability for clear overlay appliances”, was published online in ACS Applied Materials and Interfaces on 4 May 2018 ahead of inclusion in an issue.

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Impaired cognitive function is a risk indicator for dental caries

By DTI

DUNEDIN, New Zealand: There is higher prevalence of cognitive and physical impairments among older people that can adversely affect their oral self-care and make the provision of oral care difficult, according to researchers at the University of Otago. In a world first, the researchers surveyed the oral health of people living in aged residential care, and they found those with dementia and older men in general to have more teeth affected by caries. They have consequently highlighted the need for increased attention regarding the oral health of older New Zealanders.

Of the 987 people examined in the study—which was representative of more than 14,000 New Zealanders living in aged care—about half had severely impaired cognitive function and more than a third required fillings or extractions. Those with severely impaired cognitive function had higher rates of dental caries. These patients also had higher oral debris scores, reflecting poorer daily oral hygiene.

Poor oral health is one of the “geriatric giants” and a “major clinical and public health problem which is going to get worse” according to lead author Prof. Murray Thomson, Head of the Department of Oral Sciences at the university.

"Neither the aged care sector nor the dental profession, in most countries, is prepared. Not only do we have more and more older people every year, but more and more people are entering old age with their own teeth, rather than full dentures, as was the situation just a couple of decades ago. In some ways, dentistry has been a victim of its success—we have long emphasised the idea of ‘teeth for life’ without much thought to what happens towards the end of life,” explained Thomson.

"It’s a very complex situation involving a lot of players—the aged care sector, the Ministry of Health, the dental profession, and the public. An encouraging sign is the inclusion of oral health in New Zealand’s Healthy Ageing Strategy. That’s a starting point, but there is a lot of work to be done,” Thomson concluded.

However, the researchers also found that even the most cognitively impaired patients were able to be examined fairly easily, indicating that regular, routine removal of oral debris by carers should be manageable.

The study titled “Oral status, cognitive function and dependency among New Zealand nursing home residents”, was published online in Gerodontontology on 23 April 2018 ahead of inclusion in an issue.
Health labels may deter people from buying sugary drinks, study finds

By DTI

MELBOURNE, Australia: In an effort to deter people from smoking, cigarette packets are labelled with warnings and graphic images. In a new study, researchers from Australia’s Deakin University have investigated whether a similar labelling approach could dissuade people from buying sugary drinks. They found that young adults were less likely to purchase sugar-sweetened beverages that had health labels.

To investigate the possible effects of adding a health label to sugary drinks, Prof. Anna Peeters, Director of the Institute for Healthcare Transformation at the university, conducted an online experiment to examine the drink choices of almost 1,000 Australians aged between 18 and 35. According to the study, participants were recruited using online platforms from four states in Australia and represented a diverse range of socio-economic status and education levels.

Participants were asked to imagine that they were entering a shop or cafe or approaching a vending machine to purchase a drink, and they were then asked to choose between one of 15 bottles, with both sugary and non-sweetened options available. The drinks had either no label (control group) or one of four labels on sugary drinks: graphic warnings, text warnings, sugar information (including the number of teaspoons of added sugar) or a Health Star Rating—the national front-of-pack labelling system used in Australia and New Zealand.

According to the results, participants were far less likely to select a sugary drink when a front-of-pack label was displayed compared with no label, regardless of their level of education, age or socio-economic background. “Our findings highlight the potential of front-of-pack health labels, particularly graphic images and Health Star Ratings, to change consumer behaviour, reduce purchases of sugar-sweetened drinks, and help people to make healthier choices,” said Peeters.

According to Peeters, the question now is what kind of impact labels will have, on what she calls, the obesity epidemic. “While no single measure will reverse the obesity crisis, given that the largest source of added sugars in our diet comes from sugar-sweetened drinks, there is a compelling case for the introduction of front-of-pack labels on sugary drinks worldwide.”

The new research was presented at this year’s European Congress on Obesity, held in Vienna in Austria from 23 to 26 May.
Research on dolphin teeth may hold vital information on ocean pollution

By DTI

DUNEDIN, New Zealand: Using teeth to gather data on ocean pollution might seem like an unlikely method—however, when the teeth involved are those of dolphins, then the idea might not seem so improbable. In new research out of New Zealand, scientists from the dental faculty at the University of Otago are now doing exactly that to find the impact industry is having on one of the most important ecosystems on the planet.

The pilot study, being run by Dr Carolina Loch from the Department of Oral Sciences, is looking specifically at metal contaminants. Loch believes that the data recovered could be helpful in measuring the impact industries like mining has on the ocean.

Contaminants in marine environments are a particular health risk for humans and other animals, as they are absorbed into teeth and bones. “One of the key issues is that the wastewater from mining and city pollution goes back into the marine environment, and it comes back to us when we consume seafood,” said Loch.

The teeth being used are from bottlenose dolphins, since they do not migrate, and these have been provided by the archival material of Massey University in New Zealand and the South Australian Museum in Adelaide. Dolphin teeth reliably record contamination because toxic metals and trace elements from their diet are incorporated into enamel and dentine throughout their life. Because the enamel and dentine form in layers like the rings in a tree, Loch hopes that by using laser spectroscopy she will be able to reveal the toxic metal bioaccumulation over the course of the dolphin’s life.

Due to the fact that bottlenose dolphins do not migrate, Loch and her colleagues from Massey University in Auckland, the South Australian Museum and Macquarie University in Sydney in Australia are able to more accurately compare metal exposure in teeth from supposedly low-polluted areas in New Zealand to a high metal exposure area in South Australia.

The teeth from bottlenose dolphins (above) are being used by researchers in New Zealand to track the levels of pollution in the ocean. (Photograph: Dr Carolina Loch/ Otago University)

Teeth from bottlenose dolphins (above) are being used by researchers in New Zealand to track the levels of pollution in the ocean. (Photograph: Dr Carolina Loch/ Otago University)
Obesity in New Zealand may be connected with negative effects on oral health

By DTI

NEW PLYMOUTH, New Zealand: With its good weather and outdoor-focused style of life, it seems unexpected that obesity would be an issue in New Zealand. However, the idyllic country in fact has the third-highest obesity rate per capita for adults and children among the member countries of the Organisation for Economic Cooperation and Development, behind the US and Mexico. With the over-consumption of sugary food and drinks a major cause, this is also having an impact on oral health.

New Zealand has around 3,500 fast-food outlets throughout the entire country—which is about one for every 1,300 inhabitants. According to reports, the North Island region of Taranaki has the second-highest number of children with obesity in the country, with almost 20 per cent of the child population affected.

Speaking to the Taranaki Daily News, Taranaki-based paediatrician Dr Yvonne Anderson said, “Nationally, 99,000 children are affected. By the age of five Taranaki children have, on average, 1.6 teeth which are decayed, missing or have a filling. These alarming statistics need to be addressed by a positive, collaborative community-led initiative.”

A leader in the initiative to combat the concerning figures is Activity and Nutrition Aotearoa. Founded in 1996, the organisation’s aim is to have everyone in New Zealand eating well and leading an active life. By providing forums throughout New Zealand, Activity and Nutrition Aotearoa aims to bring people together to address things such as food and the environment and how to incorporate all of it into a healthy lifestyle.

While the grassroots initiative to help people understand the environment around them and that what they eat can have a negative effect on their lives and health is crucial, greater action also needs to be taken at a national level. As reported in the Taranaki Daily News, New Zealand Dental Association spokesman Dr Rob Beaglehole said the organisation wanted a tax on sugary drinks. Beaglehole went on to say that he would also like to see Minister of Education Chris Hipkins show leadership by adopting a policy of no junk food or sugary drinks being sold or provided in schools. He explained, “It doesn’t make sense for schools to be selling sickness on their property.”