Scientists discover oral cancer biomarkers associated with patient survival

By DTI

DUNEDIN, New Zealand/KOLKATA, India: In a recent study, researchers have discovered epigenetic markers that are markedly different in oral cancer tissue compared with the adjacent healthy tissue in patients. This study is one of the first to identify epigenetic markers in oral cancer. Identifying these markers could help detect early signs of cancer and significantly improve patient survival rates.

The study was conducted by researchers from the University of Otago in New Zealand and the Indian Statistical Institute (ISI) in Kolkata. The research team recruited 16 oral cancer patients in India who either smoked or chewed tobacco or had mixed habits, and took samples of their tumours and adjacent tissue. After isolating the DNA in the samples, the researchers discovered regions with altered DNA methylation and transcription in cancer cells without changes to the DNA sequence and expression in cancer cells without altering gene expression and the spread of abnormal cells. “By validating in a larger cancer cohort, we have shown that a subset of these biomarkers is significantly associated with poor prognosis of patients,” Chatterjee said.

The age-adjusted incidence of oral cancer in the world is estimated at four cases per 100,000 people, according to the World Health Organization. This oral disease is more common in men and in older people, and varies considerably by socio-economic condition. According to the 2019 report of “India Against Cancer”, of the 300,000 cases of tobacco-associated oral cancer detected globally, 86 per cent are from India. Additionally, late diagnosis and poor prognosis are key problems associated with the high mortality rate of this cancer in developing countries. The research group was surprised to find such broad differences in the oral cancer tissue compared with adjacent healthy tissue in the same patients. “We were also surprised to see that small molecules, called microRNA, were methylated or demethylated in the tumours from smokers or chewers or mixed habits, suggesting that therapeutic intervention might be different in patients depending on the way the tobacco was abused,” said lead author Dr Roshni Roy, professor in the Department of Pathology at the University of Otago.

The findings of a new study could help decrease high oral cancer mortality in developing countries. (Photograph: Majid Kafetzis/Shutterstock)

Green light for XIVIA Xylitol dental health claims

By DTI

DuPont Nutrition & Health is the first company in South Korea to receive re-approval for xylitol health claims. (Photograph: manifest/Shutterstock)

CHEONGJU, South Korea: South Korea’s Ministry of Food and Drug Safety has issued a re-approval of the health claim that consumers from 3 to 80 years old of the sweetener XIVIA Xylitol have a reduced risk of dental caries. The manufacturer, DuPont Nutrition & Health, is the first company in the country to receive such re-approval. In the re-evaluation of the sweetener, the ministry reviewed 146 research reports, including 94 clinical trials, and concluded that XIVIA Xylitol helps reduce the risk of caries at an effective daily dosage adjusted from 10–35 g down to 5–10 g, a similar amount to that of international dental association standards.

In South Korea, functional ingredients that have received a health claim approval undergo a mandatory re-evaluation every ten years. With the latest re-approval, DuPont Nutrition & Health continues to work with manufacturers to create sugar-free products with oral health in mind.

XIVIA Xylitol is claimed to deliver sweetness at 30 per cent of the calorie level of sugar. In addition, it is preferred for its relatively low glycaemic index, which makes it suitable for diabetic and health-conscious consumers. In addition to replacing sugar in chewing gum and other confectionery applications, xylitol is commonly incorporated into oral hygiene products, including toothpaste, mouthwash and teething gels.

DuPont Nutrition & Health is the first company in South Korea to receive re-approval for xylitol health claims.

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DuPont Nutrition & Health is the first company in South Korea to receive re-approval for xylitol health claims.
Scientists draw inspiration from giant panda teeth

By DTI

Scientists from China and the US have discovered that hydration is the key to pandas’ teeth lasting a lifetime. (Photograph: Hung Chung Chih/Shutterstock)

Scientists from China and the US have discovered that hydration is the key to pandas’ teeth lasting a lifetime. “Tooth enamel possesses an exceptional durability and plays a critical role in the function of teeth, however, it exhibits a remarkably low resistance to the initiation of large-scale cracks comparable to geological minerals,” said Prof. Robert O. Ritchie, who led the study.

The ingenious design of the panda’s tooth enamel, which has to withstand a daily diet of bamboo—a material of remarkable strength and toughness—comprises parallel micro-scale prisms made up of vertically aligned nanoscale fibres of the mineral hydroxyapatite embedded in an organic-rich matrix. When there is an impact on the enamel, a variety of different deformation mechanisms take place to mitigate the growth of small cracks and prevent the formation of large cracks.

“Self-recovery of the tooth enamel to counteract the early stages of damage,” explained first author Zengqian Liu. “[This] property results from the unique architecture of tooth enamel, specifically the vertical alignment of nanoscale mineral fibres and micro-scale prisms within a water-responsive organic-rich matrix.”

By introducing shape memory polymers at the interface of ceramics, the researchers believe that this self-recoverable durable material offers inspiration for the development of artificial, self-recoverable ceramic materials by introducing shape memory polymers at the interface of ceramics.

As the architecture of the panda’s tooth enamel is essentially similar to that of other vertebrates, the researchers believe that this self-recovery behaviour is likely to occur in tooth enamel in general. “Our findings also offer inspiration for the development of artificial, durable, self-recoverable ceramic materials,” said Ritchie. The team is hoping to develop tooth enamel-inspired self-recoverable durable materials to introduce shape memory polymers at the interface of ceramics.

The study, titled “Hydration-induced nano- to micro-scale self-recovery of the tooth enamel of the giant panda”, was published in the November 2018 issue of Acta Biomaterialia.

New oral appliance could help manage sleep apnoea

By DTI

Scientists from China and the US have discovered that hydration is the key to pandas’ teeth lasting a lifetime. (Photograph: Hung Chung Chih/Shutterstock)

Hydration plays a key role in the process. The viscoelasticity of the organic-rich matrix surrounding the mineral fibres facilitates self-recovery, while the presence of water decreases the width of any cracks that do form, with only a minor cost in terms of hardness.

“Our findings identify a novel means by which the tooth enamel of vertebrates develops an exceptional durability to accomplish its functionality,” added Liu. “The self-recovery process represents a new source of durability that differs markedly from the conventional protocol of fracture mechanics.”

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State government bans advertising of junk food on publicly owned space

By DTI

BRISBANE, Australia: An unhealthy diet can be a contributing factor to poor oral and general health, and advertising plays a key role in this regard. Seeking to curb this, the Queensland government has announced a ban on the promotion of unhealthy food and drinks on the advertisement spaces it owns. The move is the first of its kind by an Australian state.

Rethink Sugary Drink, a partnership of 19 leading health and community organisations, including the Australian Dental Association, praised the decision. In a statement, Craig Sinclair, head of the prevention division at Cancer Council Victoria, a partner of Rethink Sugary Drink, placed particular focus on the need to provide supportive, healthy environments for children where the considerable negative impact on sugary drinks can be tackled.

"Whether that is on their walks to school, while waiting for the bus or even when visiting sports and community centres, the presence of sugary drink marketing is overwhelming, making messages about healthier options more difficult to hear," noted Sinclair.

In addition to praising the decision by the Queensland government, Rethink Sugary Drink recommended a public education campaign supported by government that highlights the health impacts of consuming drinks high in sugar. The group also proposed comprehensive mandatory restrictions by state governments on the sale of sugar-sweetened drinks, as well as increased availability of free water, in schools, government institutions, children’s sports and places frequented by children. In addition, Rethink Sugary Drink suggested the creation of state and local government policies that reduce the availability of sugary drinks in workplaces, government institutions, healthcare settings, sports and recreation facilities, and other public places.

In a move that is the first of its kind in Australia, the Queensland government has announced a ban on the promotion of unhealthy food and drinks on the advertisement spaces it owns. (Photograph: beats1/Shutterstock)
Lower socio-economic groups in New Zealand cannot afford urgently needed dental procedures

By DTI

AUCKLAND, New Zealand: Socially disadvantaged adults in New Zealand cannot afford dental treatments, even if in great pain, resulting in dangerous do-it-yourself procedures. Consequently, various representatives of the health sector are calling for the government to take action.

In a recent statement, the New Zealand Dental Association (NZDA) called for better government funding to enable low-income adults to access dental care. Even though New Zealand adults have experienced great improvements in oral health since the 1980s, still many patients only visit a dentist when a dental problem occurs, and in particular, low-income adults see the cost as a significant barrier.

"Some truly cannot afford care, and for these groups we must do better, and that involves working with government on a better deal," said Dr Bill O’Connor, President of the NZDA.

Mike Naera, health advocate in Rotorua, commented: "Maori are over-represented in the lower socio-economic demographic and they sacrifice everything so they can live day-to-day. A lot of [them] can’t afford dental work so their options are to remain in pain or extract their teeth themselves. The consequences of paying for dental care would be sacrificing food on the table. The government should be looking for more ways to better subsidise dental work so our families don’t have to keep suffering."

According to Dr Sherry Sembhy, from Rotorua Dentists, self-dentistry is dangerous, as people do not know what they are doing, do not understand the anatomy of their teeth and use unsterile tools, which make the condition only worse. Infections, abscesses, swelling and broken teeth and jaws were some of the possible outcomes of the home procedures which Sembhy said could end up costing even more in repairs.
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W&H Australasia expands its sales range

From March 2019, W&H Australasia Pty Limited, a subsidiary of the international W&H Group, starts the distribution of the W&H Oral Surgery and Implantology (OSI) product range in Australia. Customers benefit from innovative technologies “Made in Austria” as well as high-quality W&H support and service.

Since June 2018, W&H Australasia Pty Limited has been the exclusive distributor of MaIe thermal washer disinfectors (TWD) in the dental field. W&H Australasia is now expanding its sales activities in the OSI application area to include W&H surgical devices, W&H surgical straight and contra-angle handpieces, Osstell products as well as accessories and consumables. The merchandise are distributed through a national dealer structure specializing in OSI distribution. The W&H Service Centre is designed, equipped and staffed to meet the high W&H service standards. For support and service, W&H is available by the following service number: 1300 613 988.

“I’m very pleased about the expansion of the sales portfolio to include W&H OSI products in the first step in 2019. Already in May, a further expansion of the W&H Prophylaxis & Periodontology product range in the Restoration & Prosthetics, as well as in the dental Sterilization & Hygiene application fields continues to be available through A-dec Australia,” says W&H Australasia General Manager Martin Rolfe.

Exciting time ahead

The expansion of the sales portfolio to include W&H OSI products is the first step in 2019. Already in May, a further expansion of the W&H Prophylaxis & Periodontology program is planned. W&H’s product range in the Restoration & Prosthetics continues to be available through A-dec Australia. Renowned for its quality, reliability and excellent service, W&H is one of the top brands in the field of dental technology. By combining qualified employees, a strong focus on Research & Development, close collaboration with users around the world and a modern production technology, W&H creates innovative product and service solutions.

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Researchers find effective way to teach visually impaired children oral hygiene

By DTUK

BELAGAVI, India: An adapted approach is required to train children with visual impairment in oral hygiene and to motivate them to care for their teeth regularly. Researchers at the KLE Academy of Higher Education and Research in Belagavi have tested different approaches to oral hygiene training and compared their effectiveness.

For the study, 90 visually impaired children between the ages of 12 and 15 were selected and randomly assigned to three equal groups. The first group was trained using braille, while the third group received a combination of these two approaches.

The researchers tested the dental hygiene of the children by assessing plaque and gingival status at different intervals. The first assessment was after 21 days and the final one took place after nine months. In addition, before and after the training, the children had to fill out questionnaires which recorded their knowledge and practice of oral hygiene and their attitude towards it.

The researchers found that the combined hygiene training in the third group reduced the children’s plaque and gingival scores by 55 and 52 per cent compared with the other two groups. In addition, not only did the children’s practical implementation improve, but their knowledge of the subject and their attitude towards it did too.

The study titled “Effectiveness of different oral health education interventions in visually impaired school children”, was published in the March 2019 issue of Special Care in Dentistry.