SQUID INK CAN HELP DENTISTS DETECT GUM DISEASE

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Researchers found combining squid ink with light and ultrasound was effective when examining gums.

Researchers from the University of California San Diego have found that combining squid ink with light and ultrasound works as a dental imaging method to examine patient's gums in a non-invasive, more comprehensive and more accurate way than current methods.

Dentists usually assess gum health using a thin, hook-like metal tool called a periodontal probe, which is marked with measurements and inserted between teeth and into gums to analyse whether and how much the gums have shrunk back from the teeth. This inspection of pockets, as they are known, finds healthy gums with a 1-2mm measurement, while 3mm or more is a sign of gum disease – the deeper the pockets, the more sever the gum disease. The method is uncomfortable for patients and lacks precision when it comes to diagnosis.

The proposed new method begins by rinsing the mouth with a paste made of commercially available food-grade squid ink mixed with water and cornstarch. The squid-ink-based rinse serves as a contrasting agent for an imaging technique called photoacoustic ultrasound. This involves shining a light signal — usually a short laser pulse — onto a sample, which heats up and expands, generating an acoustic signal that researchers can analyse. Squid ink naturally contains melanin nanoparticles, which absorb light. During the oral rinse, the melanin nanoparticles get trapped in the pockets between the teeth and gums. When researchers shine a laser light onto the area, the squid ink heats up and quickly swells, creating pressure differences in the gum pockets that can be detected using ultrasound. This method enables researchers to create a full map of the pocket depth around each tooth.

Combining technology with new concepts has helped efficiency in the dentist industry, with augmented reality providing patients with an insight as to what their teeth could look like with treatment, and 3D printed tooth aligners meaning trips to the dentist could be minimised. How else could dentistry be improved with the help of new technology?

29th September 2017
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