Silk spun by caddis-fly larvae underwater could one day suture surgical wounds, new research from the University of Utah suggests. The study found that the sticky fibres used by the insects to build protective shells remain intact in aquatic environments. These chemical and structural properties could make the material valuable as an adhesive tape in medical and dental surgery.

Caddis-flies, commonly known as rock rollers, usually live in bodies of water such as rivers, lakes and marshes. They are related to Lepidoptera, an insect order that includes moths and butterflies that spin dry silk. Caddis-fly larvae also spin silk but they do so underwater in order to build protective shells that remain intact in aquatic environments. These chemical and structural properties could make the material valuable as an adhesive tape in medical and dental surgery.

In the study, the researchers examined the silk made by a caddis-fly species living in the lower Provo River near Salt Lake City, under laboratory conditions. They found that the fibres made of large proteins that contain an amino acid named serine that becomes phosphorylated as the protein is synthesised. These phosphates are negatively charged and line up parallel to positively charged amino acids, thereby attracting each other and making the protein water-insoluble. Comparison with amino acids from three other species uncovered great similarities, which suggests that other caddis-fly species also use phosphorylation to spin silk underwater.

Besides these insects, such adhesives were also identified in sandcastle worms, mussels and sea cucumbers.

"It was the right vote," President Obama said during a White House press conference. "The reform plan won't fix everything wrong with the nation's health-care system, but it moves us decisively in the right direction."

In its current health-care system, which was shaped in the early 1970s, coverage is provided mainly by the private sector. Americans who are currently without insurance because of pre-existing medical conditions or the lack of financial funds.

Through this historic step, the US has become the last of the developed countries to introduce a universal health-care model. In its current health-care system, which was shaped in the early 1970s, coverage is provided mainly by the private sector. "It was the right vote," President Obama said during a White House press conference. "The reform plan won't fix everything wrong with the nation's health-care system, but it moves us decisively in the right direction."

Dentist organisations like the American Dental Association (ADA) have heavily opposed the legislation that will first become effective in 2012. In a statement released days before the ballot, the organisation rejected the House proposal because it does not include provisions to improve access to dental services provided by Medicaid, a state and federal-funded health programme for low-income families.

The ADA is also opposing workforce pilot programmes, which they fear could lead to non-dentists performing surgical dental procedures.

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Prozone confirms effectiveness of ozone dental therapy

Anja Worm
DTI

LEIPZIG, Germany: Clinical tests at the Department of Molecular Biology at the University of Salzburg in Austria have confirmed that dental treatment with Prozone, a next-generation ozone generator by Austrian manufacturer W&H, is highly effective against bacterial strains that are responsible for oro-dental infections and the development of dental caries. In the control study conducted in 2009, samples of Streptococcus mutans and Escherichia coli were gassed immediately and after 1.5 hours with ozone several times for 24 seconds.

The results demonstrated that 24-second treatments with ozone had visible effects on the treated area. In all tests, immediate treatment was more effective than treatment after 1.5 hours. When ozone treatment was performed immediately and after 1.5 hours, it took a few seconds of therapy to kill 99 per cent of bacteria, making it a thousand times more powerful than other bacteria-killing agents. Earlier studies indicate that it only takes a few seconds of therapy to kill 99 per cent of bacteria, making it a thousand times more powerful than other bacteria-killing agents.

The new study demonstrates that treatment has to be performed immediately and after 1.5 hours to ensure the best results. Delayed treatment also results in reduced bacteria count but visible effects are less significant.

Devices such as Prozone that utilise ozone technology expose filtered air to a high electrical voltage, which directly applies the treatment area where it destroys bacteria and viruses through oxidation.

Needles relieve patients of anxiety

Claudia Salwierz
DTI

LEIPZIG, Germany: Using acupuncture might help dentists to treat highly anxious patients, new research from Denmark and the UK suggests. In a study published by the British Medical Journal Group in March, scientists from the universities of Copenhagen and Sheffield found that targeting two specific acupuncture points at the top of the head decreases the average Beck Anxiety Inventory (BAI) score in adult patients by more than half.

The study’s findings were based on 20 women and men from dental practices in the UK. All participants were in their 40s and had been attempting to manage their anxiety regarding dentists for between 2 and 50 years, the study states. The acupuncture was carried out by the dentists, all of whom are members of the British Dental Acupuncture Society.

According to recent studies, up to a third of all dental patients in developed countries suffer from some form of dental anxiety. One in ten patients are so afraid of dentists that they defer dental treatment altogether.

The authors of the study said that sedatives, relaxation techniques and hypnosis, amongst other methods, have been found to be helpful in overcoming the problem, but they are often time-consuming and require considerable psychotherapeutic skill. They caution that further larger studies are required in order to confirm the value of acupuncture in controlling dental anxiety, but suggest that it may offer a simple and inexpensive method of treatment.