

Nano-sized advance toward next big treatment era in dentistry

June 30 2010



Dentists may use a special nano-sized film in the future to bring diseased teeth back to life rather than remove them.

Scientists are reporting an advance toward the next big treatment revolution in dentistry — the era in which root canal therapy brings diseased teeth back to life, rather than leaving a "non-vital" or dead tooth in the mouth. In a report in the journal *ACS Nano*, they describe a first-of-its-kind, nano-sized dental film that shows early promise for achieving this long-sought goal.

Nadia Benkirane-Jessel and colleagues note that root canal procedures help prevent tooth loss in millions of people each year. During the procedure, a dentist removes the painful, inflamed pulp, the soft tissue inside the diseased or injured tooth that contains nerves and [blood vessels](#). Regenerative endodontics, the development and delivery of

tissues to replace diseased or damaged dental pulp, has the potential to provide a revolutionary alternative to pulp removal.

The scientists are reporting development of a multilayered, nano-sized film — only 1/50,000th the thickness of a human hair — containing a substance that could help regenerate dental pulp. Previous studies show that the substance, called alpha melanocyte stimulating hormone, or alpha-MSH, has anti-inflammatory properties.

The scientists showed in laboratory tests alpha-MSH combined with a widely-used [polymer](#) produced a material that fights [inflammation](#) in dental pulp fibroblasts. Fibroblasts are the main type of cell found in dental pulp. Nano-films containing alpha-MSH also increased the number of these cells. This could help revitalize damaged teeth and reduce the need for a root canal procedure, the scientists suggest.

More information: "Nanostructured Assemblies for Dental Application", *ACS Nano*.

Provided by American Chemical Society

Citation: Nano-sized advance toward next big treatment era in dentistry (2010, June 30) retrieved 20 April 2024 from <https://phys.org/news/2010-06-nano-sized-advance-big-treatment-era.html>

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