

Curodont™ Repair and Curodont Protect™ for the treatment and prevention of tooth decay

TIMEFRAME: Estimated earliest commercial availability in the UK

CE Marked 

TECHNOLOGY

Curodont™ Repair is a novel treatment, developed by [Credentis](#), for the early treatment of tooth decay and other dental lesions (prior to cavitation). The treatment is based on a novel technology called Curolox™.

Tooth decay begins when acid produced by bacteria in plaque dissolves the mineral in the teeth, causing microscopic holes or 'pores' to form. As the decay process progresses these micro-pores increase in size and number. Eventually the damaged tooth may have to be drilled and filled to prevent toothache, or even removed.

Curodont™ Repair is a liquid that contains a peptide called P 11-4. When applied to the tooth the peptide diffuses into the subsurface micro-pores and forms a 3D scaffold made up of small fibres.

The scaffold mimics proteins found in teeth development and supports hydroxyapatite (a calcium phosphate ceramic which makes up to 50% of bones) crystallisation around it to regenerate tooth enamel, over a period of three months. This means that the cavity reduces in size, without the need to drill the tooth and later place a filling.

Before application, the tooth is prepared and cleaned which involves: polishing (with normal prophylaxis paste), wiping with diluted NaOCl (placed on a cotton swab), etching (20 seconds; 35% phosphoric acid) and rinsing with water and drying. This preparation takes about 3-5 minutes depending on experience. Curodont™ Repair is generally applied once, but can be applied again after a couple of months, if needed, for better cosmetic result. The treatment can be applied by both a dentist and dental hygienist, however, a dentist will firstly confirm diagnosis and prescribe treatment. According to the company, this treatment may lead to the reversal or arrest of the decay, if caught in the early stages.

Curodont™ Protect is an additional and complementary product that incorporates the same



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This alert presents independent research funded by the National Institute for Health Research (NIHR). The views expressed are those of the author and not necessarily those of the NHS, the NIHR or the Department of Health.

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Curolox™ technology, along with fluoride and calcium phosphate to form a gel or film over the tooth, to protect against acid erosion. It can also be used for the treatment of hypersensitive teeth.

Curodont™ Repair and Curodont™ Protect are CE marked and UK launch is expected in September 2013 (distributed by Optident).

POTENTIAL FOR IMPACT

Tooth decay is a significant public health problem in Britain. It is a chronic disease that can result in the localised and progressive demineralisation (loss of mineral content) of the hard surfaces of the tooth. Tooth decay or early tooth loss may lead to malnutrition and other health problems. In the UK, about 55% of adults have one decayed tooth or more decayed. The main treatment for cavities has been to 'drill and fill'.

According to the company, Curodont™ Repair offers patients a non-surgical, non-invasive and pain-free option for treating early tooth decay. The company states that this technology enables dentists to avoid or delay restorative procedures, which may eventually lead to tooth destabilisation and tooth loss (through drilling). This may also reduce the need for repeat procedures in future. The potential impact on NHS resources and patient care is unclear until more is known on the effectiveness of the Curodont™ technology.

EVIDENCE

PUBLISHED PAPERS AND ABSTRACTS

Schlee M, Rathe F *et al.* Effect of Curodont REPAIR in patients with proximal carious lesions: uncontrolled, non-interventional study - interim report. *Clinical Oral Investigations* 17(2013):1046-1047.

<http://www.credentis.com/en/dental-professionals/scientific-background>

Bröseler F, Tietmann C *et al.* Effect of Curodont REPAIR in patients with buccal carious lesions: a mono-centre, single-blinded, randomised, controlled, split-mouth study - intermediate report. *Clinical Oral Investigations* 17(2013):1055.

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Maude S, Tai LR, Davies RP *et al.* Peptide synthesis and self-assembly. *Topics in Current Chemistry* 2012;310:27-69.

<http://www.ncbi.nlm.nih.gov/pubmed/22025061>

Maude S, Miles DE, Felton SH *et al.* *De novo* designed positively charged tape-forming peptides: self-assembly and gelation in physiological solutions and their evaluation as 3D matrices for cell growth. *Soft Matter* 2011;7: 8085-8099

<http://pubs.rsc.org/en/Content/ArticleLanding/2011/SM/c0sm00974a>

Kyle S, Aggeli A, Ingham E *et al.* Recombinant self-assembling peptides as biomaterials for tissue engineering. *Biomaterials* 2010 Dec;31(36):9395-405.

<http://www.ncbi.nlm.nih.gov/pubmed/20932572?dopt=Citation>

Kirkham J, Firth A, Vernals D *et al.* Self-assembling peptide scaffolds promote enamel remineralization. *Journal of Dental Research* 2007 May;86(5):426-30.

<http://www.ncbi.nlm.nih.gov/pubmed/17452562>

Aggeli A, Bell M, Boden N *et al.* Responsive gels formed by the spontaneous self-assembly of peptides into polymeric beta-sheet tapes. *Nature* 1997 March 20;386 (6622):259-62.

<http://www.ncbi.nlm.nih.gov/pubmed/9069283>

ONGOING STUDIES

A proof-of-concept study has completed and further clinical studies are investigating the efficacy of Curodont™ Repair and Curodont™ Protect.

INFORMATION FROM

This Alert is based on information from the company and a time-limited internet search.