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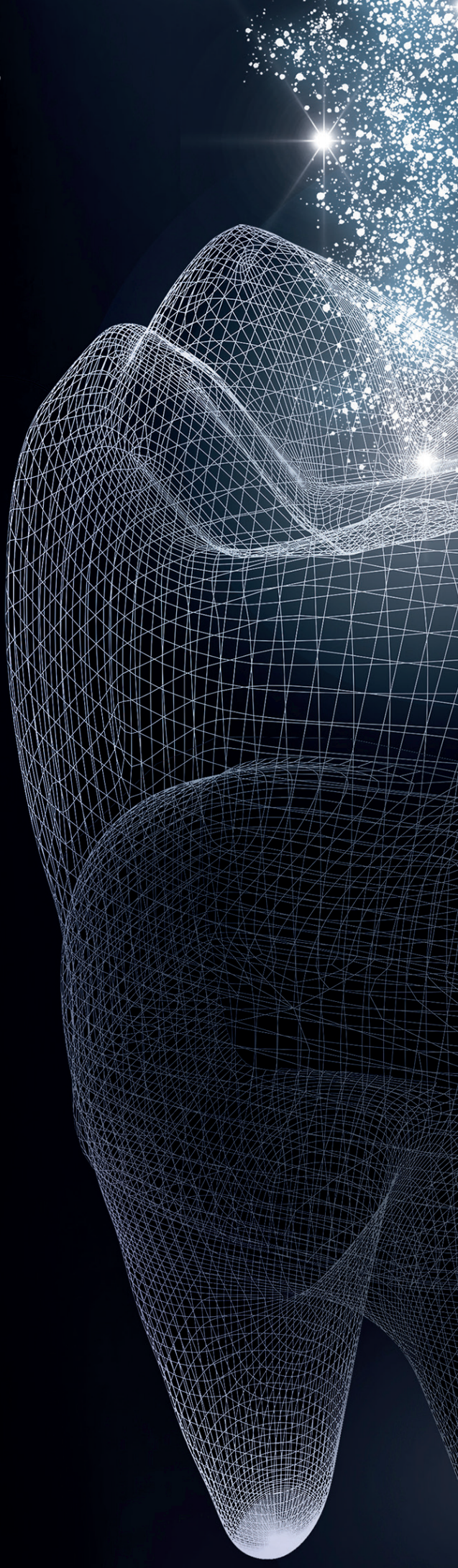
BIOMIMETIC DENTAL SCIENCE



CURODONT™ REPAIR

FAQs

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FREQUENTLY ASKED QUESTIONS

No.	Question	Answer
1	**What is CURODONT™ REPAIR?**	CURODONT™ REPAIR is the first biomimetic system for the in-office non-invasive regenerative treatment of early-stage carious lesions. It is based on an innovative peptide technology that enables Guided Enamel Regeneration throughout the depth of lesions, with a clinically proven success rate of over 90%.
2	**How does CURODONT™ REPAIR work?**	CURODONT™ REPAIR is a clinically proven formulation that is designed to treat early-stage caries, including white spot lesions, through in-depth Guided Enamel Regeneration. When applied to the surface of early-stage carious lesions, its low-viscosity liquid formulation penetrates the lesion surface and disperses throughout the depth of the lesion. Within the lesion, a biomimetic scaffold structure is formed, mimicking the natural enamel matrix. This scaffold attracts calcium and phosphate ions from the saliva and promotes the formation of new hydroxyapatite crystals, leading to regeneration of enamel throughout the depth of the lesion. Clinical studies have demonstrated a success rate of over 90% with a single application of CURODONT™ REPAIR. CURODONT™ REPAIR represents a significant breakthrough in caries management, closing a long-standing treatment gap in care and establishing a new category of drill-free restoration of early-stage caries when prevention has failed.
3	**What is the basis of the phrase 'Guided Enamel Regeneration'?**	Guided Enamel Regeneration (GER) is a tissue regeneration treatment concept wherein tooth enamel crystals are rebuilt after being lost to caries, without the need to drill the tooth, leading to arrest and regression of an early-stage carious lesion. Enamel is a unique tissue that develops naturally only once during tooth development. It involves cells called ameloblasts that lay down an organic protein matrix, on which hydroxyapatite crystals are deposited. Ameloblasts and the natural enamel matrix are lost after enamel formation, which is why it was difficult to regenerate enamel until now.
4	**Why non-invasive restorative intervention with CURODONT™ REPAIR is not the same as 'remineralization'?**	Machiulskiene V et al. in a consensus report in 2020 stated that "remineralization is the net gain of mineral in previously demineralized tissue. The word 'remineralization' can be misleading as it does not imply that the lesion has regained its original mineral content." (Machiulskiene V et al. Caries Res. 2020;54(1):7-14), rather it only indicates that some recovery of mineral content has occurred. It particularly does not equate to ordered, structured crystal formations of hydroxyapatite, nor does it indicate the depth at which the mineral is deposited. CURODONT™ REPAIR promotes the formation of hydroxyapatite crystals throughout the lesion depth, helping preserve natural tooth structure and supporting in-depth enamel regeneration. Thus, the most accurate term to describe its mode of action is a non-invasive regenerative intervention.

5	**How does the mechanism of action of CURODONT™ REPAIR differ from superficial remineralizing products?**	Superficial remineralizing treatments, such as fluoride varnish, are primarily indicated for the prevention of caries on sound tooth surfaces. Fluoride is documented to have a depth of action of approximately 25 µm (Schmidlin P et al. J Appl Oral Sci. 2016;24:31-6). The presence of early-stage caries that extends beyond the tooth surface, deeper into the enamel, up to even the dentino-enamel junction, indicates that prevention has failed. On proximal surfaces, this depth could be up to 1.5 mm (1500 µm) and on the occlusal surfaces up to 2-2.5 mm (2000-2500 µm). CURODONT™ REPAIR is the non-invasive treatment for such lesions that enables Guided Enamel Regeneration throughout the lesion depth.
6	**What types of caries can CURODONT™ REPAIR be used for?**	CURODONT™ REPAIR is intended to be used for the treatment of early-stage carious lesions on all teeth and tooth surfaces. These lesions often appear as white discolorations (and, occasionally, brown) on smooth and occlusal surfaces. For proximal lesions, radiographs and/or advanced diagnostic measures, such as transillumination may be used. Early-stage caries seen on x-rays or seen as established white spot lesions indicate that prevention has failed. Then, CURODONT™ REPAIR is the treatment that acts throughout the depth of lesions. The range of lesions that can be treated using CURODONT™ REPAIR, according to common classification systems, include: I. E0-E2, D1-D3 notation system E1 and E2 lesions. D1 lesions may be treated, only if they are not cavitated. [Anusavice K. J Dent Educ. 2005;69:538-854.] II. WHO/Marthaler classification D1 and D2 lesions. D3 lesions may be treated only if they are not cavitated [Marthaler TM. Helv Odontol Acta 1966;10:1–18.] III. ICDAS II scoring system. ICDAS Score 1 and score 2. Score 3 may be treated but the microcavity will not be filled. [https://iccms-web.com/uploads/asset/592848be55d87564970232.pdf. Accessed 01/02/2022] If frank cavitation is present, excavation of the caries and a conventional restoration with an artificial material is needed. CURODONT™ REPAIR is not indicated for such lesions.

7	**Why should early carious lesions be treated if they are asymptomatic?**	Caries is the most prevalent non-communicable disease worldwide (Lancet 2018; 392: 1789–8583). Early-stage caries affect nearly 80% of all patients (Skeie MS et al. BMC Oral Health. 2022;22:620) with approximately 3.5 lesions per patient. A majority of these lesions are left untreated. These untreated lesions can progress resulting in irreversible loss of tooth structure, accompanied by pain and swelling. Over time, more complex treatments may be required and can ultimately lead to tooth loss. Untreated caries may also affect overall health, increasing the risk of secondary systemic diseases (Liu J et al. Int J Epidemiol. 2022;51:1291-1303). So far, there has been no targeted treatment tailored for these early-stage lesions. CURODONT™ REPAIR closes this treatment gap, between prevention and invasive restorative treatment. CURODONT™ REPAIR is a one-time, proactive, drill-free, needle-free biomimetic approach for early-stage caries that reverses early-stage caries and preserves natural tooth structure. It is applied in a short and easy procedure lasting a few minutes, presenting a win-win situation for both clinicians and patients.
8	**Which types of patients can be treated with CURODONT™ REPAIR?**	CURODONT™ REPAIR is suitable for all patients, including children. Clinical studies show the efficacy of CURODONT™ REPAIR in different age groups, including children, adolescents, and adults. A randomized controlled clinical trial demonstrated the effectiveness of CURODONT™ REPAIR on early-stage caries in primary teeth in 3–5-year-olds. [Natchiyar N et al. Pediatr Dent. 2023;45:99-106]
9	**Can CURODONT™ REPAIR be used in patients with a high risk of caries?**	Yes, a high risk of caries is not a contraindication for the use of CURODONT™ REPAIR. These patients are often recommended a regimen of regular recalls to diagnose new lesions as soon as they develop and treat these with CURODONT™ REPAIR.
10	**Can CURODONT™ REPAIR be used in patients with poor oral hygiene?**	Poor oral health is not a contraindication for the use of CURODONT™ REPAIR. Godenzi et al. 2023 found no association between oral hygiene and the outcome of treatment with CURODONT™ REPAIR (Godenzi D. J Am Dent Assoc. 2023;154:885-896.e9). There is no evidence about any difference in the results of CURODONT™ REPAIR based on oral hygiene status. Maintaining good oral hygiene is a general guideline for everyone to prevent new disease and promote overall oral health.
11	**Can CURODONT™ REPAIR be used on early carious lesions while a patient is undergoing orthodontic treatment?**	Yes, CURODONT™ REPAIR can be used on early caries developing around bonded brackets. Patients undergoing fixed orthodontic treatment are at an increased risk of developing caries, due to difficulty in oral hygiene maintenance (Welk A et al. Scientific Rep 2020;10:6819). Since the use of CURODONT™ REPAIR does not require any finishing and polishing procedures, it can easily be used around bonded brackets. Additionally, CURODONT™ REPAIR has been shown to have no negative effect on the shear bond strength of the orthodontic adhesive; thus, it can be used without the need to take off the bracket (Knaup T et al. J Orofac Orthop. 2021;82:329-336).

12	**Can CURODONT™ REPAIR be used on sound tooth surfaces for caries prevention?**	CURODONT™ REPAIR is a treatment for early-stage caries. It is not a preventive agent like toothpaste or fluoride varnish. When applied to the surface of early-stage caries, it penetrates beyond the tooth surface and into the full depth of the lesion and promotes in-depth Guided Enamel Regeneration. Thus, it is not indicated for prevention but for early-stage caries, seen as white spots (or, occasionally, brown) on buccal and occlusal tooth surfaces or as radiolucencies in the enamel on interproximal surfaces on x-rays. CURODONT™ PROTECT helps protect teeth from decay. It contains the vVARDIS peptide technology in a gel form, along with calcium, phosphate and fluoride. Studies have shown that CURODONT™ PROTECT inhibits demineralization and enables surface remineralization significantly better than fluoride varnish (Jablonski-Momeni A et al. Sci Rep 2019:9:269).
13	**Can I use CURODONT™ REPAIR on white spot lesions due to causes other than caries?**	Available evidence supports the use of CURODONT™ REPAIR for early-stage caries on all tooth surfaces, including smooth and occlusal surfaces.
14	**How many early carious lesions can I treat with one CURODONT™ REPAIR applicator?**	One box of CURODONT™ REPAIR contains 10 ready-to-use applicators. Each applicator is intended to be used for 1-2 early-stage carious lesions. In interproximal sites, where both adjacent proximal surfaces have early-stage caries, the same applicator can be used to treat both lesions.
15	**How many times should CURODONT™ REPAIR be used to treat one early-stage caries lesion?**	Scientific and real-world evidence has demonstrated that one application of CURODONT™ REPAIR is sufficient to treat one lesion, with a success rate of over 90% (Alkilzy M et al. J Dent Res. 2018;97:148-154; Doberdoli, D et al. Sci Rep 2020;10:4195; Welk A et al. Scientific Rep 2020;10:6819; Bröseler F et al. Clin Oral Investig. 2020;24:123-132; Godenzi D. J Am Dent Assoc. 2023;154:885-896.e9)
16	**What is the treatment protocol for using CURODONT™ REPAIR?**	I. Identify and diagnose early-stage carious lesions II. Patient education III. Professional tooth cleaning IV. Removal of the organic debris and salivary pellicle [using your preferred method - 2% sodium hypochlorite (per IFU), prophy paste, air polisher, pumice] V. Rinse and Dry VI. Etching using 35% phosphoric acid for 20 seconds maximum. [In interproximal sites, use unwaxed floss to distribute etchant] VII. Rinse and dry. VIII. Place cotton rolls IX. Activate one CURODONT™ REPAIR applicator and apply by pressing the saturated sponge on/near the lesion for 5-10 seconds [In interproximal sites, press the sponge from the lingual and buccal embrasures. Separators or wedges not required] X. In the next 5 minutes, patients can close their mouth while instructions are provided. XI. Discharge the patient with instructions to not eat, drink or rinse for 30 minutes. XII. Regular recalls to diagnose new lesions and treat with CURODONT™ REPAIR
17	**Do I need to use a rubber dam before applying CURODONT™ REPAIR?**	No advanced isolation aids such as rubber dam are required in the clinical protocol of CURODONT™ REPAIR. Basic aids such as cotton rolls around the treatment site are sufficient. Whether to use a rubber dam is a matter of clinician assessment and judgment.

18	**What precautions does a patient need to take after CURODONT™ REPAIR application?**	Immediately after the application of CURODONT™ REPAIR, the patient can close their mouth while in the chair and should refrain from eating, drinking or rinsing for 30 minutes. Following treatment, routine oral hygiene measures including brushing twice a day and flossing are recommended.
19	**Have there been side effects reported with CURODONT™ REPAIR?**	CURODONT™ REPAIR has been safely and successfully used in clinical practice for over a decade. Clinicians should evaluate patients with known allergies when treating with CURODONT™ REPAIR.
20	**Can I include CURODONT™ REPAIR in existing appointments for other procedures?**	Yes, the entire procedure for CURODONT™ REPAIR takes only a few minutes of chair time (including cleaning, etching and squeezing of the sponge at the treatment site) and thus can be integrated into existing appointments by dentists and hygienists. Considering the high prevalence of early-stage caries, efficiencies can be further enhanced by including CURODONT™ REPAIR in all procedure trays such as those for routine hygiene, restorative, orthodontic, etc. Keeping patient education materials handy can also help clinicians with communication.
21	**Will white spots disappear completely?**	CURODONT™ REPAIR is designed to be a non-invasive regenerative treatment for early-stage caries. While esthetic improvement can occur as a result, CURODONT™ is not intended to be a cosmetic treatment. It is recommended to treat early-stage caries as soon as they develop to maximize the esthetic improvement. In the esthetic zone, lesions treated with CURODONT™ REPAIR can be supplemented with the topical application of CURODONT™ PROTECT or the vVARDIS Enamel serum at home.
22	**What is the ideal time to follow up on a carious lesion treated with CURODONT™ REPAIR?**	There is no requirement to arrange definite follow up appointments after treatment with CURODO™ REPAIR. Patients can be recalled for their regular hygiene appointments as scheduled. Clinical studies have shown a success rate of over 90% after one application of CURODONT™ REPAIR. (Alkilzy M et al. J Dent Res. 2018;97:148-154; Doberdoli, D et al. Sci Rep 2020;10:4195; Welk A et al. Scientific Rep 2020;10:6819; Bröseler F et al. Clin Oral Investig. 2020;24:123-132; Godenzi D. J Am Dent Assoc. 2023;154:885-896.e9)
23	**What is a successful outcome with CURODONT™ REPAIR?**	Success with CURODONT™ REPAIR is seen as the arrest and/or regression (reversal) through Guided Enamel Regeneration throughout the depth of the lesion, with studies showing a success rate of over 90% after one application. (Alkilzy M et al. J Dent Res. 2018;97:148-154; Doberdoli, D et al. Sci Rep 2020;10:4195; Welk A et al. Scientific Rep 2020;10:6819; Bröseler F et al. Clin Oral Investig. 2020;24:123-132; Godenzi D. J Am Dent Assoc. 2023;154:885-896.e9)

24	**How should I talk to patients about CURODONT™ REPAIR?**	Patient communication should be short, simple, and effective. For example: **Situation:** I've spotted some cavities on your x-rays. We can treat today with a drill-free solution in a few minutes. **Benefits:** We can preserve your natural tooth structure. No needle, no drill. No artificial filling materials. **How does it work:** CURODONT™ REPAIR works below the surface of the tooth to strengthen and repair damaged areas. It not only helps to stop early decay from progressing, it also reverses the decay by supporting the natural repair of the tooth – without needles, without drilling, and without traditional fillings. **What about Fluoride?** Fluoride can be used afterwards as Prevention against new cavities. For this cavity, prevention is already too late because it is too deep for Fluoride to work. **Any other option?** Drilling. Today we know untreated caries can lead to severe diseases, when prevention is not an option anymore. **But I am not feeling any pain?** It is good that you are not feeling any pain. It means the cavity is not close to the dental pulp. Otherwise, we would be discussing more invasive procedures. **During the follow-up appointment.** **Did it work (we cannot see on the X-ray)?** In over 90% of cases, this treatment has been successful. It supports the reversal of the decay by restoring lost minerals. However, this process is not always visible on an X-ray. If, at your next visit, we see that the cavity has not progressed, we know that this natural repair process has begun — and the tooth does not need to be drilled at this stage.
25	**What scientific evidence exists for CURODONT™ REPAIR?**	CURODONT™ REPAIR is supported by a robust evidence base comprising multiple peer-reviewed randomized controlled clinical studies, including long-term data, systematic reviews, and in vitro studies. Clinical studies demonstrate a success rate of over 90% with a single application of CURODONT™ REPAIR. Randomized controlled clinical trials, conducted across diverse patient populations, clinical settings, and tooth surfaces, demonstrate that CURODONT™ REPAIR not just leads to a significantly superior rate of caries arrest than the current gold-standard fluoride varnish but also significantly superior caries regression. Caries regression, due to enamel regeneration, has been assessed in various ways, such as reduction in radiographic lesion depth, reduction in laser fluorescence readings, reduction in impedance measurement values, shrinking of lesion size, and lowering of ICDAS severity scores. (Alkilzy M et al. J Dent Res. 2018;97:148-154; Doberdoli, D et al. Sci Rep 2020;10:4195; Welk A et al. Scientific Rep 2020;10:6819; Bröseler F et al. Clin Oral Investig. 2020;24:123-132; Godenzi D. J Am Dent Assoc. 2023; 154:885-896.e9)