

### **Cervitec® Plus – The protective varnish containing chlorhexidine and thymol protects exposed root surfaces and controls bacteria.**

The caries risk rises if the number of mutans streptococci increases significantly in the mouth. In these cases, routine oral hygiene measures, professional tooth cleaning and fluoridation do not adequately protect the teeth from damage.

The Cervitec Plus varnish system, which contains the effective combination of the active ingredients chlorhexidine and thymol, allows you to selectively control these germs and therefore reduce an important caries risk factor [1-5]. The transparent varnish works spot on [6-8]. It helps to maintain the high quality of teeth and precision restorations for a long time [9-15].

#### **Intended purpose**

- Protection of teeth
- Generally, Cervitec Plus is applied every three months [4; 8; 9]. If intensive treatment is required, however, the varnish may also be applied more frequently [16; 17].

#### **Indications**

- Exposed root surfaces [18; 19].
- Hypersensitive cervicals [20; 21].
- Bacterial activity on tooth surfaces [6; 16; 22-30].

#### **Advantages**

- 1% chlorhexidine and 1% thymol in a homogenous solution
- Works spot on [6-8]
- Colourless, transparent clear varnish

#### **Benefits for the practice team**

- Effective bacterial control [1-4; 22; 24; 31; 32]
- Treatment of difficult-to-reach areas [5; 9; 16; 17; 22; 33-58]
- Optimum esthetics in the anterior region

#### **References:**

1. Zhang Q, van Palenstein Helderma WH, van't Hof MA, Truin GJ. Chlorhexidine varnish for preventing dental caries in children, adolescents and young adults: a systematic review. *Eur J Oral Sci* 2006;114:449-455.
2. Ersin NK, Eden E, Eronat N, Totu FI, Ates M. Effectiveness of 2-year application of school-based chlorhexidine varnish, sodium fluoride gel, and dental health education programs in high-risk adolescents. *Quintessence Int* 2008;39:e45-51.
3. Sköld-Larsson K, Borgstrom MK, Twetman S. Effect of an antibacterial varnish on lactic acid production in plaque adjacent to fixed orthodontic appliances. *Clin Oral Investig* 2001;5:118-121.
4. Petersson LG, Maki Y, Twetman S, Edwardsson S. Mutans streptococci in saliva and interdental spaces after topical application of an antibacterial varnish in schoolchildren. *Oral Microbiol Immunol* 1991;6:284-287.
5. Baca P, Munoz MJ, Bravo M, Junco P, Baca AP. Effectiveness of chlorhexidine-thymol varnish for caries reduction in permanent first molars of 6-7-year-old children: 24-month clinical trial. *Community Dent Oral Epidemiol* 2002;30:363-368.
6. Jentsch HFR, Eckert FR, Eschrich K, Stratul SI, Kneist S. Antibacterial action of Chlorhexidine/thymol containing varnishes in vitro and in vivo. *Int J Dent Hyg* 2014;12:168-173.

7. Attin T, Abouassi T, Becker K, Wiegand A, Roos M, Attin R. A new method for chlorhexidine (CHX) determination: CHX release after application of differently concentrated CHX-containing preparations on artificial fissures. *Clinical Oral Investigations* 2008;12:189-196.
8. Huizinga ED, Ruben JL, Arends J. Chlorhexidine and thymol release from a varnish system. *J Biol Buccale* 1991;19:343-348.
9. Araujo AM, Naspitz GM, Chelotti A, Cai S. Effect of Cervitec on mutans streptococci in plaque and on caries formation on occlusal fissures of erupting permanent molars. *Caries Res* 2002;36:373-376.
10. Schmalz G, Hellwig F, Mausberg RF, Schneider H, Krause F, Haak R, Ziebolz D. Dentin Protection of Different Desensitizing Varnishes During Stress Simulation: An In Vitro Study. *Oper Dent* 2017;42:E35-E43.
11. Besimo CHE, Guindy JS, Lewetag D, Meyer J. Prevention of bacterial leakage into and from prefabricated screw-retained crowns on implants in vitro. *Int J of Oral & Maxillofacial Implants* 1999;14:654-660.
12. Johansson LA, Ekfeldt A, Petersson LG, Edwardsson S. Antimicrobial effect of a chlorhexidine varnish, Cervitec in healing caps in osseointegrated prosthetic treatment. *Swed Dent J* 1994;16:255-256.
13. Besimo CHE, Guindy JS, Lewetag D, Besimo RH, Meyer J. Marginale Passgenauigkeit und Bakteriendichtigkeit von verschraubten implantatgetragenen Suprastrukturen. *Parodontologie* 2000;3:217-229.
14. Nekkalapudi S, Mikulski L, Gurund S, Appachu KM, Andreana S. Antimicrobial effect of a chlorhexidine varnish as coating on implant abutments. *IADR Abstract* 2015.
15. Schoppe J, Lendenmann U. Hemmhoftests mit Cervitec Plus auf verschiedenen Dentalmaterialien. Internal Investigation Report, Ivoclar-Vivadent AG, Schaan, Principality of Liechtenstein 2019.
16. Lipták L, Szábo K, Nagy G, Márton S, Madléna M. Microbiological Changes and Caries-Preventive Effect of an Innovative Varnish Containing Chlorhexidine in Orthodontic Patients. *Caries Res* 2018;52:272-278.
17. Kneist S, Zingler S, Lux C. Therapiebegleitende Massnahmen zur Kontrolle des Karies- und Demineralisationsrisikos bei kieferorthopädischer Behandlung. *ZWR Das deutsche Zahnärzteblatt* 2008;117:218-228.
18. Baca P, Clavero J, Baca AP, Gonzalez-Rodriguez MP, Bravo M, Valderrama MJ. Effect of chlorhexidine-thymol varnish on root caries in a geriatric population: a randomized double-blind clinical trial. *Journal of Dentistry* 2009;37:679-685.
19. Tan HP, Lo EC, Dyson JE, Luo Y, Corbet EF. A randomized trial on root caries prevention in elders. *Journal of Dental Research* 2010;89:1086-1090.
20. Drebenstedt S, Zapf A, Rodig T, Mausberg RF, Ziebolz D. Efficacy of two different CHX-containing desensitizers: a controlled double-blind study. *Operative Dentistry* 2012;37:161-171.
21. Sethna GD, Prabhuji ML, Karthikeyan BV. Comparison of two different forms of varnishes in the treatment of dentine hypersensitivity: a subject-blind randomised clinical study. *Oral Health Prev Dent* 2011;9:143-150.
22. Sköld-Larsson K, Sollenius O, Petersson LG, Twetman S. Effect of topical applications of a novel chlorhexidine-thymol varnish formula on mutans streptococci and caries development in occlusal fissures of permanent molars. *J Clin Dent* 2009;20:223-226.
23. Baygin O, Tuzuner T, Ozel M-B, Bostanoglu O. Comparison of combined application treatment with one-visit varnish treatments in an orthodontic population. *Med Oral Patol Oral Cir Bucal* 2013;18:e362-370.
24. Baygin O, Tuzuner T, Kusgoz A, Senel AC, Tanriver M, Arslan I. Antibacterial effects of fluoride varnish compared with chlorhexidine plus fluoride in disabled children. *Oral Health Prev Dent* 2014;12:373-382.

25. Flamee S, Gizani S, Caroni C, Papagiannoulis L, Twetman S. Effect of a chlorhexidine/thymol and a fluoride varnish on caries development in erupting permanent molars: a comparative study. *Eur Arch Paediatr Dent* 2015;16:449-454.
26. Lipták L, Bársony N, Twetman S, Madléna M. The effect of a chlorhexidine-fluoride varnish on mutans streptococci counts and laser fluorescence readings in occlusal fissures of permanent teeth: A split-mouth study. *Quintessence Int* 2016;47:767-773.
27. Narayan A, Satyaprasad S, Anandraj S, Ananda SR, Kamath PA, Nandan S. Comparison of efficacy of three chemotherapeutic agents on *Streptococcus mutans* count in plaque and saliva: A randomized controlled triple blind study. *Journal of the Indian Society of Pedodontics and Preventive Dentistry* 2017;35:174-180.
28. Ben Khadra GM, Arrag EA, Alammori M, AlKadi MF. The effect of chlorhexidine-thymol and fluoride varnishes on the levels of *Streptococcus mutans* in saliva in children aged 6-8 years. *Indian J Dent Res* 2019;30:67-72.
29. Paula VA, Modesto A, Santos KR, Gleiser R. Antimicrobial effects of the combination of chlorhexidine and xylitol. *British Dental Journal* 2010;209:E19.
30. Sajjan PG, Nagesh L, Sajjanar M, Reddy SK, Venkatesh UG. Comparative evaluation of chlorhexidine varnish and fluoride varnish on plaque *Streptococcus mutans* count--an in vivo study. *Int J Dent Hyg* 2013;11:191-197.
31. Duskova J, Broukal Z, Kratky M. Inhibition of the oral streptococcus mutans - transfer in the mother and child care: results in mothers and infants in the 3rd year of study. *Caries Res* 2000;34:347.
32. Dubielecka M, Slotwinska SM. Suppression of caries in mothers and caries risk in offspring. *Journal of Dental Research* 2005;84 (Spec Iss B):Abstract # 0068.
33. Huizinga ED, Ruben J, Arends J. Effect of an antimicrobial-containing varnish on root demineralisation in situ. *Caries Res* 1990;24:130-132.
34. Lynch E, Beighton D. Short-Term Effects of Cervitec on the Microflora of Primary Root Caries Lesions Requiring Restoration. *Caries Res* 1993;27:236.
35. Bratthall D, Serinirach R, Rapisuwon S, Kuratana M, Luangjarmekorn V, Luksila K, Chaipanich P. A study into the prevention of fissure caries using an antimicrobial varnish. *Int Dent J* 1995;45:245-254.
36. Twetman S, Hallgren A, Petersson LG. Effect of an antibacterial varnish on Mutans Streptococci in plaque from enamel adjacent to orthodontic appliances. *Caries Res* 1995;29:188-191.
37. Eronat C, Alpöz AR. Effect of Cervitec varnish on the salivary *Streptococcus mutans* levels in the patients with fixed orthodontic appliances. *Journal of Marmara University Dental Faculty* 1997;2:605-608.
38. Marren PV, Lynch E, Heath MR. Cervitec's effect on plaque mutans streptococci covering healthy root surfaces. *Journal of Dental Research* 1997;76:93.
39. Øgaard B, Larsson E, Glans R, Henriksson T, Birkhed D. Antimicrobial effect of a chlorhexidine-thymol varnish (Cervitec) in orthodontic patients. A prospective, randomized clinical trial. *J orofac Orthop* 1997;58:206-213.
40. Twetman S, Petersson LG. Effect of different chlorhexidine varnish regimens on mutans streptococci levels in interdental plaque and saliva. *Caries Res* 1997;31:189-193.
41. Sköld K, Twetman S, Hallgren A, Yucel-Lindberg T, Modéer T. Effect of a chlorhexidine/thymol-containing varnish in prostaglandin E2 levels in gingival crevicular fluid. *European Journal of Oral Sciences* 1998;106:571-575.
42. Twetman S, Petersson LG. Interdental caries incidence and progression in relation to mutans streptococci suppression after chlorhexidine-thymol varnish treatments in schoolchildren. *Acta Odontol Scand* 1999;57:144-148.
43. Yucel-Lindberg T, Twetman S, Sköld K, Modéer T. Effect on an antibacterial dental varnish on the levels of prostanoids, leukotriene B4, and interleukin-1 in gingival crevicular fluid. *Acta Odontol Scand* 1999;57:23-27.

44. Ekenbäck SB, Linder LE, Lönnies H. Effect of four dental varnishes on the colonization of cariogenic bacteria on exposed sound root surfaces. *Caries Res* 2000;34:70-74.
45. Madléna M, Vitalyos G, Márton S, Nagy G. Effect of chlorhexidine varnish on bacterial levels in plaque and saliva during orthodontic treatment. *J Clin Dent* 2000;11:42-46.
46. Øgaard B, Larsson E, Henriksson T, Birkhed D, Bishara SE. Effects of combined application of antimicrobial and fluoride varnishes in orthodontic patients. *American Journal of Orthodontics and Dentofacial Orthopedics* 2001;120:28-35.
47. Joharji RM, Adenubi JO. Prevention of pit and fissure caries using an antimicrobial varnish: 9 month clinical evaluation. *J Dent* 2001;29:247-254.
48. Benz C, Benz B, El-Mahdy KR, Hickel R. The effect of preventive regimens on dentate elderly after 3 years. *Journal of Dental Research* 2002;81(Spec Iss A):Abstract #2734.
49. Brailsford SR, Fiske J, Gilbert S, Clark D, Beighton D. The effects of the combination of chlorhexidine/thymol- and fluoride-containing varnishes on the severity of root caries lesions in frail institutionalised elderly people. *Journal of Dentistry* 2002;30:319-324.
50. Haukali G, Poulsen S. Effect of a varnish containing chlorhexidine and thymol (cervitec) on approximal caries in 13- to 16-year-old schoolchildren in a low caries area. *Caries Research* 2003;37:185-189.
51. Heintze SD. Interdental mutans streptococci suppression in vivo: a comparison of different chlorhexidine regimens in relation to restorative material. *American Journal of Dentistry* 2002;15:103-108.
52. Johnson G, Almqvist H. Non-invasive management of superficial root caries lesions in disabled and infirm patients. *Gerodontology* 2003;20:9-14.
53. Wicht MJ, Haak R, Lummert D, Noack MJ. Treatment of root caries lesions with chlorhexidine-containing varnishes and dentin sealants. *Am J Dent* 2003;16:25A-30A.
54. Baca P, Munoz MJ, Bravo M, Junco P, Baca AP. Effectiveness of chlorhexidine-thymol varnish in preventing caries lesions in primary molars. *J Dent Child (Chic)* 2004;71:61-65.
55. Sköld-Larsson K, Fornell AC, Lussi A, Twetman S. Effect of topical applications of a chlorhexidine/thymol-containing varnish on fissure caries assessed by laser fluorescence. *Acta Odontol Scand* 2004;62:339-342.
56. Gokalp S, Baseren M. Use of laser fluorescence in monitoring the durability and cariostatic effects of fluoride and chlorhexidine varnishes on occlusal caries: a clinical study. *Quintessence Int* 2005;36:183-189.
57. Plotzita B, Kneist S, Berger J, Hetzer G. Efficacy of chlorhexidine varnish applications in the prevention of early childhood caries. *Eur J Paediatr Dent* 2005;6:149-154.
58. Zhang Q, van 't Hof MA, Truin GJ, Bronkhorst EM, van Palenstein Helderma WH. Caries-inhibiting effect of chlorhexidine varnish in pits and fissures. *J Dent Res* 2006;85:469-472.