

**Chapter 1 : BnF - Healthcare and medicine**

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Contemporary perspective on the use of fluoride products in caries prevention. Br Dent J, ; Mechanistic aspects of the interactions between fluoride and dental enamel. Crit Rev Oral Biol Med, ; 2: Elevated fluoride products enhance mineralisation of advanced enamel lesions. J Dent Res, ; The disease and its clinical management, Oxford: Blackwell and Munsgaard, Acid profile in carious dentin. Larsen MJ, Fejerskov O. Chemical and structural challenges in remineralization of dental enamel lesions. Scand J Dent Res, ; Braz J Oral Res, ; 23 special issue 1: The chemistry of enamel caries. Crit Rev Oral Biol Med, ; Resisting the onset of hydroxyapatite dissolution through the incorporation of fluoride. J Phys Chem B, ; Role of saliva in caries models. Adv Dent Res, ; 9: Yehia A, Ezzat K. Fluoride uptake by synthetic apatites. Its role in dentistry. Braz J Oral Res, ; 24 special issue 1: Adsorption kinetics of fluoride on low cost materials. Water Res, ; The kinetics of fluoride uptake by synthetic hydroxyapatite. Handbook of Inorganic Chemistry. Proposed nomenclature for glass-ionomer dental cements and related materials. Quintessence Int, ; A revised classification for direct tooth-colored restorative materials. Dent Mater, ; Fluoride release from dental resin composites. Nicholson JW, Alsarheed M. Changes on storage of polyacid-modified composite resins. J Oral Rehabil, ; Buffering and ion release by a glass-ionomer cement under near-neutral and acidic conditions. A study of glass-ionomer cement and its interface with enamel using a low-temperature, high-resolution scanning electron microscopic technique. Chemical exchange between glass ionomer restorations and residual carious dentine in permanent molars: An in vivo study. J Dent, ; 4: The ART approach using glass-ionomers in relation to global oral health care. Review on fluoride-releasing restorative materials - Fluoride release and uptake characteristics, antibacterial activity and influence on caries formation. Glass ionomer cements in pediatric dentistry: Pediatr Dent, ; Int J Prosthodont, ; 3: Nicholson JW, Czarnecka B. The biocompatibility of resin-modified glass-ionomers for dentistry. The effect of curing regime on the release of hydroxyethyl methacrylate HEMA from resin-modified glass ionomer cements. J Dent, ; Hamid A, Hume WR. The effect of dentine thickness on diffusion of resin monomers in vitro. Geukins S, Goossens A. Occupational contact allergy to meth acrylates. Contact Dermatol, ; Dent Mater J, ; Arora V, Bogra P. A new hybrid aesthetic restorative material. J Conserv Dent, ; 5: Two-year clinical evaluation of flowable composite resin containing pre-reacted glass-ionomer. Ped Dent J, ; Antibacterial activity of composite resins with glass-ionomer filler particles. Microleakage of newly developed glass carbomer cement in primary teeth. Eur J Dent, ; 7: Ion processes in glass ionomer cements. Short- and long-term fluoride release from glass ionomers. Xu X, Burgess JO. Compressive strength, fluoride release and recharge of fluoride-releasing materials. Tay WM, Braden M. Fluoride ion diffusion from polyalkenoate glass-ionomer cements. Fluoride release from glass-ionomer and compomer materials; 6 month data. The effect of saliva on fluoride release by a glass-ionomer filling material. Koch G, Hatibovic-Kofman S. Glass ionomer cements as a fluoride release system in vivo. Swed Dent J, ; Fluoride uptake and release characteristics of glass ionomer cements. Caries Res, ; A comparison of fluoride release from four glass-ionomer cements. Release of fluoride from conventional and metal-reinforced glass ionomer cements. Fluoride release from fluoride-containing materials. Oper Dent, ; Short-term fluoride release from various aesthetic restorative materials. Hatibovic-Kofman S, Koch G. Fluoride release from glass ionomer cement in vivo and in vitro. Glass polyalkenoate glass-ionomer cements: Am J Dent, ; Fluoride recharge of aesthetic dental materials. Fluoride release and re-uptake in direct tooth-coloured restorative materials. Fluoride release profiles of mature restorative glass ionomer cements after fluoride application. Glass ionomer material as a rechargeable fluoride release system. Int J Paediatr Dent, ; 7: The uptake and release of fluoride by ion-leaching cements after exposure to toothpaste. Effects of intrinsic fluoride concentration on the uptake and release of fluoride from two glass ionomer cements. The kinetics of fluoride uptake from aqueous solutions of immature glass-ionomer dental cements. Dental Forum, ; Maturation affects

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It is known to contribute to the dynamic mineralisation process of the natural tooth mineral, and also to become incorporated with the mineral phase, forming a thin layer of fluorapatite. This is more resistant to acid attack than the native hydroxyapatite, hence protects the tooth against further decay. Other recently discovered aspects of the role and uptake of fluoride will also be discussed. One of the widely used dental restoratives, the glass-ionomer dental cement, is able to release fluoride in a sustained manner that may continue for many years, and this is seen as clinically beneficial. There are also fluoride-containing conventional composite resins able to release fluoride. These various materials are reviewed and the way in which they release fluoride are described, as well as the effectiveness of the release at the levels involved. Studies of effectiveness of fluoride release from these various classes of material are reviewed, and shown to suggest that release from conventional and resin-modified glass-ionomers is more beneficial than from composite resins. This is attributed to 2 causes: The absence of these other ions in fluoridated composites means that remineralisation is able to occur to a lesser extent, if at all. Fluoride-release ; Dental Restorative Materials 6. Contemporary perspective on the use of fluoride products in caries prevention. Br Dent J, ; Mechanistic aspects of the interactions between fluoride and dental enamel. Crit Rev Oral Biol Med, ; 2: Elevated fluoride products enhance mineralisation of advanced enamel lesions. J Dent Res, ; The disease and its clinical management, Oxford: Blackwell and Munsgaard, Acid profile in carious dentin. Larsen MJ, Fejerskov O. Chemical and structural challenges in remineralization of dental enamel lesions. Scand J Dent Res, ; Braz J Oral Res, ; 23 special issue 1: The chemistry of enamel caries. Crit Rev Oral Biol Med, ; Resisting the onset of hydroxyapatite dissolution through the incorporation of fluoride. J Phys Chem B, ; Role of saliva in caries models. Adv Dent Res, ; 9: Yehia A, Ezzat K. Fluoride uptake by synthetic apatites. Its role in dentistry. Braz J Oral Res, ; 24 special issue 1: Adsorption kinetics of fluoride on low cost materials. Water Res, ; The kinetics of fluoride uptake by synthetic hydroxyapatite. Handbook of Inorganic Chemistry. Proposed nomenclature for glass-ionomer dental cements and related materials. Quintessence Int, ; A revised classification for direct tooth-colored restorative materials. Dent Mater, ; Fluoride release from dental resin composites. Nicholson JW, Alsarheed M. Changes on storage of polyacid-modified composite resins. J Oral Rehabil, ; Buffering and ion release by a glass-ionomer cement under near-neutral and acidic conditions. A study of glass-ionomer cement and its interface with enamel using a low-temperature, high-resolution scanning electron microscopic technique. Chemical exchange between glass ionomer restorations and residual carious dentine in permanent molars: An in vivo study. J Dent, ; 4: The ART approach using glass-ionomers in relation to global oral health care. Review on fluoride-releasing restorative materials - Fluoride release and uptake characteristics, antibacterial activity and influence on caries formation. Glass ionomer cements in pediatric dentistry: Pediatr Dent, ; Int J Prosthodont, ; 3: Nicholson JW, Czarnecka B. The biocompatibility of resin-modified glass-ionomers for dentistry. The effect of curing regime on the release of hydroxyethyl methacrylate HEMA from resin-modified glass ionomer cements. J Dent, ; Hamid A, Hume WR. The effect of dentine thickness on diffusion of resin monomers in vitro. Geukins S, Goossens A. Occupational contact allergy to meth acrylates. Contact Dermatol, ; Dent Mater J, ; Arora V, Bogra P. A new hybrid aesthetic restorative material. J Conserv Dent, ; 5: Two-year clinical evaluation of flowable composite resin containing pre-reacted glass-ionomer. Ped Dent J, ; Antibacterial activity of composite resins with glass-ionomer filler particles. Microleakage of newly developed glass carbomer cement in primary teeth. Eur J Dent, ; 7: Ion processes in glass ionomer cements. Short- and long-term fluoride release from glass ionomers. Xu X, Burgess JO. Compressive strength, fluoride release and recharge of fluoride-releasing materials. Tay WM, Braden M. Fluoride ion diffusion from polyalkenoate glass-ionomer cements. Fluoride release from glass-ionomer and compomer materials; 6 month data. The effect of saliva on fluoride release by a glass-ionomer filling material. Koch G, Hatibovic-Kofman S. Glass ionomer cements as a fluoride release system in vivo. Swed Dent J, ;

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*Handbook of Experimental Pharmacology Volume BARBER, D.L., Department of Stomatology, School of Dentistry, Division of the Handbook's Editorial Board for.*

Discussion Thyroid hormones are the factors regulating and supervising processes of bone remodeling and mineral exchange [4, 5, 12, 13]. The majority of researches are devoted to influence of thyroid hormones on kinetics and biomechanics of orthodontic teeth transfer []. At the increased concentration of thyroid hormones rate of teeth transfer is enlarged, at reduction " is decreased [17]. Our research has been devoted to studying of influence of orthodontic tooth movement on the background of the disturbance of a thyroid gland function on the activity of bone phosphatases and proteinases. Results of the research have testified that modeling of orthodontic teeth transfer, especially in animals with an experimental goiter provokes resorption of bone tissue of a mandible and development of teeth caries. It is compounded with the data of experimental research of D. Our researches have shown the intensity of carious process to a less degree depends on an orthodontic intervention as neither the quantity, nor depth of carious lesions were not enlarged in healthy rats whom were fixed orthodontic springs. AIP is responsible for mineralization of hard tooth tissues, and AcP " takes part in resorption demineralization of dentine and enamel [19, 20]. It is necessary to notice that the reduction of AIP activity in animals with modeling of a goiter and T is less appreciable, than augmentation of AcP activity. On the basis of it, it is possible to conclude that aggravation of carious process in rats at modeling of teeth transfer or on the background of an experimental goiter occurs basically at the expense of intensifying of resorpted processes, instead of at the expense of oppression of remineralization of hard teeth tissues. The important component of resorption of bone tissue is degradation of an albuminous matrix under the influence of proteolytic enzymes, which operates stage by stage at various value of [20, 21]. In connection with registration of intensifying of atrophy of an alveolar bone in rats under the influence of the orthodontic forces, the most expressed on the background an experimental goiter was of interest researches of general proteolytic activity of GPA 7. The augmentation of activity of proteinases showed aggravation of degradation of protein of bone tissue at fixation of orthodontic springs on the background of a goiter. These results are proved by more appreciable degree of atrophy of an alveolar bone in rats with T and by an experimental goiter. Expression augmentation of osteocalcin, alkaline phosphatase and osteal morphogenetic proteins is established at action of thyroid hormones []. As activity of osteal AIP grows at an intensification of processes of mineralization and in our research intensifying of resorption in an alveolar bone at reproduction of a goiter or orthodontic teeth transfer is revealed, it is possible to explain the registered increase of AIP activity by compensatory reaction on action of the general and local factors. And the combination of these factors aggravates augmentation of AIP activity as well as AcP activity and proteolytic enzymes in bone tissue of an alveolar process. Conclusion Thus, the received results of research show that in experimental animals on the background of functional and morphological disturbances of a thyroid gland orthodontic tooth transfer is accompanied by sharp aggravation of resorption processes of bone tissue of an alveolar process, demineralization of hard tooth tissues. Increasing of the proteinases activity of bone tissue and the disturbance of bone phosphatases activity testify about it. Hence, children with thyroid gland diseases need carry out of active treatment-and-prophylactic measures at stages of active apparatus treatment of maxillo dental anomalies. It will allow avoiding the complication at orthodontic treatment, such as focal demineralization of enamel, digestsention and fenestration of an alveolar bone. The further researches are necessary for the purpose of working out the strategy of complex orthodontic treatment for the category of children to take into account the stomatologic status and the main disease. Acknowledgments We are grateful to Professor A. Babanin rector of Crimean State Medical University n. Georgievsky , Professor K. Levitsky for the opportunity to carry out experimental research. Epidemiology of thyroid disease. Nihon Rinsho ; 70 Peculiarities of thyroid pathology in the childhood. Lik Sprava ; 5: The changing epidemiology of iodine deficiency. Nat Rev Endocrinol ; 8 7: Thyroid hormone excess rather than thyrotropin deficiency induces osteoporosis in hyperthyroidism. Mol Endocrinol ; A lack of thyroid hormones rather than excess thyrotropin causes abnormal skeletal development

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