BioMin: Prevention of post-scaling sensitivity

By Richard Whatley, BioMin Technologies CEO

A new comparative study has confirmed that BioMin F is more effective than other toothpastes tested in reducing sensitivity after scaling and root planing, something dental hygienists are already finding.

Sensitivity after scaling and root planing is a common problem, and one that dental hygienists and therapists are only too familiar with. Many patients with sensitivity problems have tried a number of toothpastes without success, and either suffer after scaling procedures or cannot even bear to endure them. Others find that the procedure triggers sensitivity.

An innovative new toothpaste has now been launched, BioMin F, which offers a different approach to the treatment and prevention of sensitivity, and has been shown not only to improve the problem on a daily basis, but also to have an immediate effect in reducing sensitivity after scaling.

A recent trial, published in Contemporary Clinical Dentistry in 2018, compared the efficacy of three toothpastes in reducing dentine hypersensitivity immediately after scaling, and at 15, 30 and 60 days later.[1] The pastes were (a) a standard fluoride toothpaste containing 1,450 ppm fluoride; (b) Sensodyne Repair and Protect, containing the active ingredient NovaMin (calcium sodium phosphosilicate); and (c) BioMin F, containing the bioactive glass compound fluoro calcium phosphosilicate.

Participants were asked to brush their teeth with the toothpaste allocated to them for two minutes immediately after the scaling and root planing treatment, and then no more than twice a day for the two-month trial period. They were recalled at 15, 30 and 60 days to measure their subjective and thermal sensitivity. The BioMin F group showed the highest degree of toothpaste effectiveness at reducing dentine hypersensitivity, followed by the NovaMin group and then the standard fluoride toothpaste group.

What is BioMin F?

BioMin F is an innovative toothpaste that contains fluoro calcium phosphosilicate bioactive glass as its active ingredient. After brushing with BioMin F, the glass particles bond to the teeth and enter the dentinal tubules, where they gradually dissolve over a period of up to 12 hours, slowly releasing calcium, fluoride and phosphate ions. These work in concert with the saliva in the mouth to form fluorapatite to aid effective remineralisation of the enamel and prevent fluid flow through the dentinal tubules (hydraulic conductivity), which triggers sensitivity.

The glass acts as a slow-release vehicle for the calcium, fluoride and phosphate ions, enabling them to continue dissolving without being quickly rinsed away, and the phosphate ions enhance the formation of fluorapatite, the fluoride analogue of the natural tooth mineral compound, hydroxyapatite. Fluorapatite is more stable and resistant to acid attack than hydroxyapatite formed by the previous generation of bioactive glasses.

Starting the remineralisation process ahead of treatments such as scaling, root planing and whitening, known to cause sensitivity in susceptible patients, means the enamel begins strengthening in advance. Brushing with BioMin F immediately after treatment has been shown to halt the development of sensitivity by starting to take effect within an hour of brushing.

For patients who do not wish to use a fluoride-containing toothpaste, but suffer from sensitivity, BioMin C has been developed. BioMin C toothpaste develops hydroxyapatite on the tooth surfaces, including any exposed dentinal tubules, and has been shown to be almost as effective as BioMin F and more effective than other sensitivity toothpastes.

The authors concluded that "clinical improvement of hypersensitivity through the formation of fluorapatite may aid to hypothesise that fluoro calcium phosphosilicate could be useful in remineralisation and the prevention of demineralisation of tooth structures, especially dentine." They added that it also inhibited the metabolism of bacteria associated with caries, by preventing their metabolic acid production.

They also observed a clinically significant reduction in sensitivity in the group that brushed with BioMin F immediately after the scaling and root planing treatment, suggestive of BioMin F providing immediate relief. The researchers concluded that "fluoro calcium phosphosilicate dentifrices may provide a new direction for the treatment of dentinal hypersensitivity." This is in accordance with the experience of many dental hygienists who have used and recommended BioMin F for their patients who suffer from dentine hypersensitivity. Hygienist Gitana Rėderienė from Lithuania routinely applies BioMin with a soft rotary brush after scaling and polishing with regular polishing toothpaste. "By polishing, the biofilm is removed and teeth become more sensitive to acidic food or staining food," she explained. "Because BioMin F forms a fluorapatite layer on the tooth surface, I can be sure that my patients leave the clinic with protected dentine. They no longer complain of post-scaling sensitivity."

Sam Davidson, a dental hygienist who works in practices across Kent and South East England in the UK, has been recommending BioMin F to patients with sensitivity who have had no success with the major sensitivity toothpaste brands, and has been using it for patients who experience sensitivity after scaling. Her own trial among patients has confirmed that they find BioMin has helped their sensitivity problems, and they keep coming back for more. One of her greatest successes has been an elderly patient with extreme sensitivity due to gingival recession, whose condition improved to the point where Sam was able to carry out scaling—something that had previously been impossible. She now routinely recommends BioMin F to patients with recession and ahead of carrying out treatments such as whitening. "I am passionate about the product," she said.

Bhavana Dower, a hygienist working in Streatham in south London in the UK agrees. She too recommends that patients with erosion or dentine hypersensitivity use BioMin F, and advises patients to use the product ahead of deep cleaning procedures. "I particularly like the idea of the particles entering the dentinal tubules and occluding them to reduce fluid flow and sensitivity," she said. "I suggest my colleagues try it for themselves and see the results."

Theresa McCarter, a hygienist and continuing education speaker from California in the US, was impressed with the results after her patients switched to BioMin F. One of her most problematic patients, a man in his sixties, dental phobic and with poor home care, had tried many sensitivity treatments without success. After using BioMin F for four months, his sensitivity had improved significantly. McCarter remarked, "I was astonished—I was able to scale his teeth without him jumping out of the chair. He couldn't believe it didn't hurt." She also observed that the general state of his hygiene was better than usual; she assumed this was because the sensitivity had improved, and he was not suffering the usual pain when brushing. It was an "unbelievable improvement," she said.

Before and after carrying out scaling and whitening, the team at Mullingar Dental Centre in Ireland now routinely recommend and give out samples of BioMin F to prevent or treat any sensitivity that may arise. "It works," said hygienist Donna Paton. "Scientifically, we think the BioMin effect is very convincing," she added. "No other toothpaste does what it achieves: it strengthens enamel in a different way and helps treat and prevent sensitivity. It has all the elements you would want in a toothpaste."

Editorial note: A list of references can be obtained from the publisher.


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Gitane Rėderienė's procedure to manage post-scaling sensitivity with BioMin F.

- Post-scaling, clean the teeth with the prophy paste of choice.
- Wash off the residual paste.
- Apply a small bead of BioMin F toothpaste into a small dappen dish.
- Dab a small rotary brush into the paste and carefully apply the paste, using a slow brush speed, to exposed dentine of the scaled teeth.

International accreditation

The Oral Health Foundation of the UK has announced that BioMin F has become the first toothpaste to gain accreditation for its effectiveness at both sensitivity reduction and enamel remineralisation, confirming that BioMin F provides "protection and relief from the effects of sensitivity, early stage dental decay and acid attack."[2].