

Enhanced protection for kids

BioMin F, the toothpaste delivering controlled release fluoride for enhanced enamel protection, is now available in a special children's variant. **Moira Crawford** looks at what it can offer

Moira Crawford

Freelance health writer and editor

Taking the best possible care of their children's teeth is a high priority for most parents. At the surgery, the dental team is on hand to help introduce them to toothbrushing, regular check-ups, reducing sugar in the diet and, in later years perhaps, orthodontics – all with the aim of sending them into adulthood with a full set of healthy, white and straight teeth.

But often, the lure of sweets, carbonated drinks and acidic fruit juices, together with a natural reluctance to brush as thoroughly and often as they should, means children's dental health can be poorer than dentists might wish.

Erosion and loss of tooth enamel due to sugars and acids in the diet, together with poor oral hygiene, are common – and extractions are a major issue in children, even in their deciduous teeth.

There are many children's toothpastes available on the market, in child-friendly flavours and with reduced levels of soluble fluoride, to combat the problems surrounding children's dental health, but there is now a new way for parents to strengthen their children's tooth enamel and remineralise any initial surface damage: BioMin F for Kids.

Continuous fluoride release

Due to be launched in the UK in April, BioMin F for Kids is based on the same innovative technology as the original BioMin F, the culmination of many years' research into bioactive glasses at Queen Mary University of London.

Unlike most toothpastes, which include soluble fluoride in varying concentrations, Professor Robert Hill and his team have developed a toothpaste in which an optimum combination of fluoride, calcium and phosphate ions are incorporated into the structure of bioactive glass, which dissolves slowly over several hours to release these ions.

Professor Hill's argument is that it is not a high concentration of fluoride that provides protection for teeth, but the slow, continuous presence of fluoride, which increases remineralisation. The controlled release mechanism of BioMin F means fluoride is delivered continuously and for much longer than conventional fluoride toothpastes, which are rapidly rinsed away by saliva.

The remineralisation effect is enhanced by increased levels of phosphate in the BioMin F particles, and its action enables fluorapatite to be deposited onto the tooth surface, creating a protective barrier and remineralising tooth enamel.

A trial among children (Garg et al, 2020) compared fluoride retention levels following brushing with BioMin F and Colgate for Kids.

Children were split into two groups, and asked to brush their teeth under supervision for two minutes using one of the toothpastes.

Samples of saliva were collected beforehand, and the level of fluoride in their saliva was measured 30 minutes and one hour after brushing. After 30 minutes, both groups

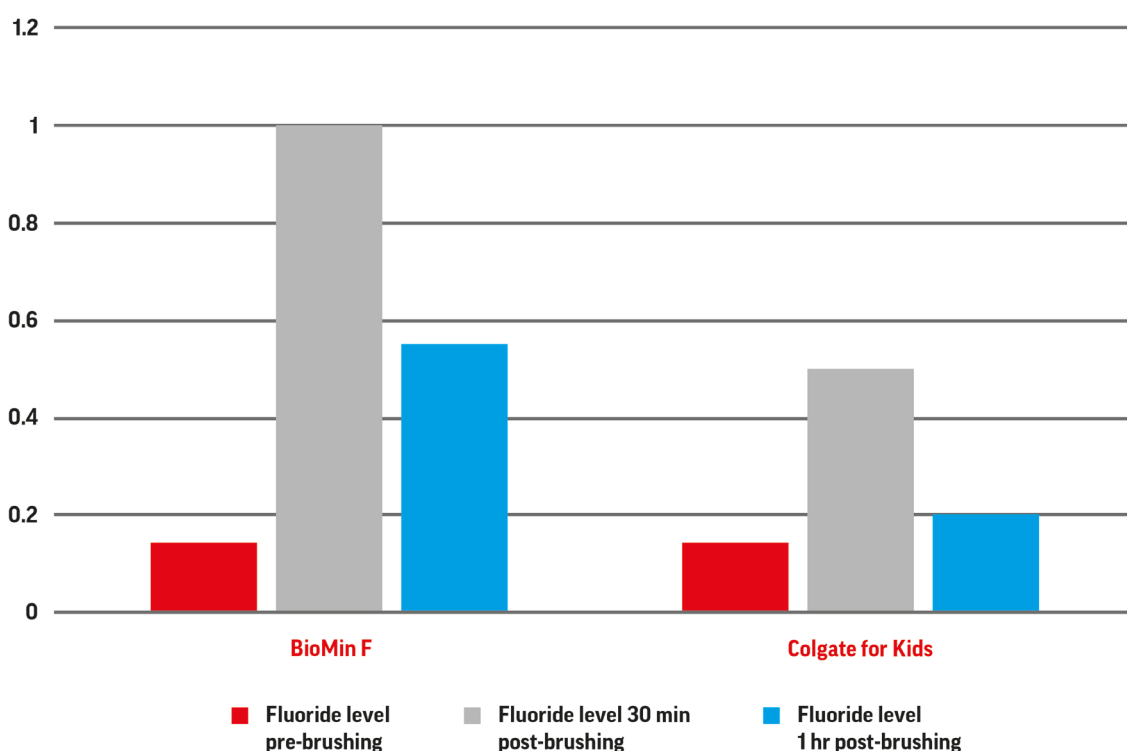


Figure 1: Comparison of fluoride retention levels

showed a rise in fluoride levels, but after one hour the fluoride levels in the soluble fluoride group had fallen back to baseline, while the BioMin F group continued to have raised fluoride levels (Figure 1).

The researchers concluded: 'These new technology dentifrices could be a means of reducing the fluoride content of toothpastes for children, while ensuring adequate concentrations are maintained for longer. Therefore, fluoro calcium phosphosilicate dentifrices may provide a new direction for caries prevention.'

Previous simulated studies in the laboratory using BioMin F have shown that fluoride was still present at 12 hours and some residual activity was seen even 24 hours after brushing.

Child-friendly taste and texture

BioMin F has been available in the UK for almost three years and BioMin F for Kids will extend its benefits to children.

Aimed at three to six year olds, it has the same fluoride strength as BioMin F (5%), which equates to 530ppm available fluoride, considerably lower than conventional soluble fluoride toothpastes – and it has undergone all the necessary cytotoxicity and biocompatibility studies for the UK market, ensuring its safety. BioMin F for Kids is not tested on animals, is suitable for vegans and has halal certification.

To make BioMin F for Kids attractive to children, who tend not to like the taste of mint, it is available in two pleasant fruity flavours – melon and strawberry – and comes as a silvery coloured gel that does not contain titanium dioxide.

Feedback on the taste and texture from children trialling the toothpaste has been positive.

To capture their imagination, the packaging for BioMin F for Kids features a friendly dinosaur, Bino, and a range of reward stickers and other materials are available to support the product and

make toothbrushing fun.

Richard Whatley, chief executive officer of BioMin Technologies, commented: 'We want to extend the protective benefits of BioMin F to children. BioMin F for Kids acts to remineralise and strengthen the enamel of their teeth, providing a barrier to combat acid attack from soft drinks, fruit juices and other sugars. Based on the success of the adult product, we are using the same slow release technology to add mineral and enhance protection and the ability to counter acid attack.' **D**

Reference

Garg A, Ganesh M, Sodani V, Kamala DN (2020) Comparative retentive levels of fluoride levels in saliva following toothbrushing with sodium fluoride and fluoride-containing bioactive glass dentifrices in children – an in vivo study. *Heal Talk* 12(3): 56-58

AFTER BRUSHING WITH BioMin F, the tiny particles of bioactive glass adhere to the tooth surface. There, they dissolve over up to 12 hours, slowly releasing fluoride, calcium and phosphate ions in an ideal ratio to restore equilibrium following acid attack, and work with the saliva in the mouth to precipitate fluorapatite, the fluoride analogue of natural tooth mineral.

Fluorapatite is more stable and resistant to acid attack than hydroxyapatite, formed by previous generations of bioactive glass, while the higher phosphate content enhances both the speed and effectiveness of the remineralisation process.

The fluorapatite acts to remineralise lost tooth enamel, strengthening the teeth. The continuous slow release mechanism means a lower dose of fluoride is required than with conventional soluble fluoride to achieve greater efficacy.

BioMin F has an additional 'smart' effect – in the presence of acid in the mouth, it starts dissolving more quickly to restore the equilibrium and begin the remineralisation process.

www.trycare.co.uk/biomin-toothpaste
www.biomin.co.uk 01274 881044



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