A new solution for dentin hypersensitivity

By Fred Michmershuizen, Online Editor

In an interview with Dental Tribune, Dr. Fotinos S. Panagakos, director of clinical research relations and strategy within the Research and Development division of Colgate-Palmolive, discusses dentin hypersensitivity, its effect on patients and the dentists who treat them — and a new product that can help alleviate the condition.

How did you get interested in the area of dentin hypersensitivity? The Colgate-Palmolive company has been very interested in the area of dentin hypersensitivity for many years. We have had a potassium-based sensitivity toothpaste available in most countries for consumers to alleviate the pain associated with dentin hypersensitivity. Recently, Colgate launched a new dentin sensitivity product, Colgate Sensitive Pro-Relief Paste, based on the Pro-Argin technology. The Pro-Argin technology consists of arginine, a naturally occurring amino acid, and insoluble calcium in the form of calcium carbonate.

These ingredients are delivered in a prophylaxis paste containing a mild abrasive system and can be applied with a prophylaxis cup or a cotton-tipped applicator to teeth that exhibit dentin hypersensitivity.

Mechanism of action studies have shown that this technology physically seals dentin tubules with a plug that contains arginine, calcium carbonate and phosphate. This plug, which is resistant to normal pulp pressures and to acid challenge, effectively reduces dentin fluid flow and, thereby, reduces sensitivity.

Recently, a number of studies have been published supporting the launch of this new product. Laboratory tests demonstrating the product’s mode of action, as well as clinical trials demonstrating instant and long-lasting relief of dentin hypersensitivity, have been presented to the dental profession as evidence that the Pro-Argin technology provides instant and lasting relief of dentin hypersensitivity.

The reader can access the full range of research studies on the Colgate dental professional Web site, located at www.colgateprofessional.com.

Can you please explain what causes dentin hypersensitivity and, specifically, what is going on with a patient biologically? Dentin is normally covered by enamel, or cementum. Due to any number of factors, including abrasion or periodontal disease causing gingival recession or erosion removing the enamel, the underlying dentin and dentin tubules can become exposed.

An external stimulus — such as a change in external temperature or air movement — or a physical stimulus can cause discomfort for the patient. The external stimulus is usually transitory and the discomfort subsides shortly after the stimulus is removed.

The accepted theory of how dentin hypersensitivity pain is transmitted suggests that pressure or ionic changes in the fluid that exists in the dentin tubules stimulates the pain experienced by the patient. This is often referred to as the “hydrodynamic theory.”

Inside the dentin tubule, a change in osmotic pressure causes fluid movement, which is transmitted as a stimulus to the odontoblastic process and fires the afferent nerve ending in the dentin tubule.

Please describe how this condition affects patients — and how it affects the dentists who treat them.

Dentin hypersensitivity is growing in incidence and is often a chief concern among patients. Dentin hypersensitivity’s main effect on individuals is the impact on quality of life. Patients have to avoid certain foods and beverages that may trigger a painful response, thus reducing the type of foods and drinks one can enjoy.

In the dental office, what is normally a routine visit may end up being a very uncomfortable appointment for a patient with dentin hypersensitivity. Simple procedures, such as scaling and a prophylaxis, may be painful. And, at times, the pain assos.
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periodontal disease, allows the dental professional to develop a definitive diagnosis, which needs to be performed by the patient through the use of home care products.

The second approach recommended by dental professionals to help prevent and/or treat dentinal hypersensitivity is through the use of over-the-counter desensitizing agents. Desensitizing agents work by altering the levels of charged molecules in the dentinal tubule fluid. They can be applied professionally in the dental office or by the patient.

The potassium ions enter the dentinal tubule fluid, reducing the excitation caused by the movement of fluid in the dentinal tubules, and blocking the transmission of the stimulus from the odontoblastic process to the nerve in the pulp chamber.

Most products require continued use over a four- to eight-week period before relief may be realized by the patient. In addition, the product often needs to be continued in order to maintain the relief afforded by the potassium nitrate.

For those patients who do not positively respond to the use of occluding agents or desensitizing agents, the dental professional may turn to covering the exposed dentin using direct or indirect restorations. Finally, periodontal surgery, involving the grafting of gingival tissue to cover the exposed dentin, may be performed.

Colgate Sensitive Pro-Relief paste seeks to address some of the deficiencies seen in the currently available occluding and desensitizing products. Treatment is simple. The paste is gentle to gingival tissues, does not elicit pain when applied and has a pleasant mint flavor.

The dental professional applies a small amount of paste to sensitive tooth surfaces with a slowly rotating soft prophy cup. It can also be spot applied using a cotton-tipped applicator. Paste can also be applied to furcations and other hard-to-reach areas with a microbrush.

The dental professional should carefully burnish the Colgate Sensitive Pro-Relief paste into all sensitive areas, focusing on the CEJ and exposed cementum and dentin.

And, as mentioned previously, clinical research has demonstrated both an instant and long-lasting relief of dentin hypersensitivity in patients who have had the product applied versus a placebo prophy paste.

Is there anything you would like to add?

Dentin hypersensitivity is a common and growing problem among patients. Effective diagnosis is key in the management of this problem. Use of an in-office product such as Colgate Sensitive Pro Relief paste provides instant and long-lasting relief for the patient and a comfortable, productive dental appointment for both patient and dental professional.

As with most things in dentistry, trying a product first before committing to it is essential. I encourage my dental professional colleagues to try a sample of this new product to see for themselves how truly effective it is in managing dentin hypersensitivity, and to consider incorporating it into the office’s patient management process.