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## Citrox: A closer look at Perio Plus+' secret ingredient

■ The unique formulation of CURAPROX's new Perio Plus+ series is largely thanks to the work of two men: Christoph Fiolka, a chemist specialised in oral care products, and Howard Thomas, a prolific microbiologist with a passion for natural health products, who sadly passed away this past October. The chlorhexidine-based formula of the series' mouthwash, toothpaste and gel was improved with a natural supplement to optimise treatment results. The new formulation's secret ingredient? Citrox.

"We were looking for a natural antibacterial to use in dental products," says Richard Thomas, managing director of Curaprox UK and Howard Thomas's son. "There were only three main existing ones that were very old and they all had a number of negative aspects. In 2004, I came across the substance we now call Citrox, and immediately started thinking about its benefits from a dental point of view."

Howard spent the following thirteen years trying to understand exactly how the bioflavonoid reacts and what exactly makes it such a potent antibacterial. The first Citrox-based mouthwashes followed shortly afterwards and proved to work amazingly well. Shortly before his death, Howard updated the Citrox formulation and presented it to Christoph, who perfected it and developed the Perio Plus+ product series.

### Howard's legacy

"During the Perio Plus+ project, I mostly worked with Howard. I always experienced the collaboration as very exciting, instructive and constructive," Christoph says. "Howard had already studied a variety of Citrox' features and applications, so needless to say, he had an incredible wealth of experience. I received three basic formulations for the mouthwash, the gel and the toothpaste from him, which I then expanded to a total of six recipes and adapted to meet our needs, such as creating a more pleasant taste. Also, the combination of Citrox and polylysine, another natural antibacterial, keeps Citrox in the mouth for a longer period of time and actively prevents irritation and tooth discolouration, two common side effects of purely chlorhexidinebased products. There is still a lot of Howard's approach in the formula, if not mostly his, and his formulations are the basis for the entire Perio Plus+

#### A natural alternative

With a move towards more natural products in the market, Citrox sets a new gold standard. "The substance is sourced from bitter oranges, which people have been using as food for centuries," Christoph explains. "This means that people have already gotten used to the ingredients and no side effects are expected." As subsequent cytotoxicity studies have shown, this



^ Christoph Fiolka, developer of the final formulation of the Perio Plus+ product series.

is exactly the case. What's more, there seems to be no resistance to the product range, which makes the introduction of Citrox even more exciting, as it could theoretically limit the use of antibiotics and the rampant problem of antibiotic resistance.

#### "Citrox ticks all the boxes"

"Apart from being all-natural, organic and hypoallergenic, the beauty of Citrox is that it is very effective at killing bacteria at very low levels," Richard says. "Citrox ticks all the boxes. Most importantly, it has the amazing ability to break down biofilm, the beginning of all oral disease." As a result, Citrox, combined with chlorhexidine, is more effective than chlorhexidine on its own. Take plaque for example—bacteria hide in plaque. Citrox breaks down the biofilm and the remaining bacteria are left exposed to the chlorhexidine, which is why Perio Plus+ is more effective than any other antiseptic that only uses chlorhexidine. Or as Richard concludes: "It's a double whammy."

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