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Biomimetic Hydroxyapatite in oral care applications

Abstract: Calcium phosphate compounds form the inorganic phases of our mineralised tissues such as bone and teeth, playing an important role in hard tissue engineering and regenerative medicine. In dentistry and oral care products, biomimetic hydroxyapatite (HA) is a stable and biocompatible calcium phosphate with low solubility being used for various applications such as tooth remineralisation, reduction of tooth sensitivity, oral biofilm control, and tooth whitening. Clinical data on these products is limited with varied results; additionally, the effectiveness of these apatite compounds versus fluoride, which has conventionally been used in toothpaste, has not been established. It's therefore possible to evaluate current research on Biomimetic HA oral care, and discuss the role and mechanism of hydroxyapatite and biomimetic HA in remineralisation of both enamel and dentine and for suppressing dentine sensitivity. Furthermore, we position HA's role in biofilm management and highlight the role of HA in dental applications by summarising the recent achievement and providing an overview of commercialised Biomimetic HA in different dental products. The review also indicates the existing limitations and provides direction for future research and commercialisation of apatite-based oral care products.

Biography: Marco Lelli is graduated in Pure Chemistry in 2007 at the University of Bologna - Department of Chemistry "G. Ciamician".

He worked at the University of Bologna, Department of Chemistry "G. Ciamician" as a research fellow until 2013. He currently works as a freelancer and collaborates with companies in the Oral Care sector (as a scientific consultant). It works in collaboration with universities and research centers.

He is the author of over 50 articles and patents