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Enhancing effect of elastin-like polypeptide-based matrix on the physical properties of MTA

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Elastin-like polypeptide (ELP) is one of the genetically engineered protein-based polypeptides, which has advantages in outstanding biocompatibility, long-term stability, elasticity and cost-effectiveness. This study is aimed to investigate the effect of ELP-based matrix on the physical properties and biocompatibility of MTA. The two types of ELPs were synthesized and 10 wt% ELP solutions were mixed with the MTA powder with various L/P ratios. The compressive strength, micro-hardness, washout resistance, structural analysis by SEM and Fourier Transform Infrared spectroscopy and biocompatibility were investigated. The ELP-based matrix enhanced the physical properties of MTA including compressive strength, micro-hardness and washout resistance of MTA. ELP incorporation showed no impeding effect of the biocompatibility. However, ELPs prolonged the setting time of MTA. These results suggested that ELP-based matrix to MTA presented the enhancing effect on the physical properties, without hampering the chemical structure and biocompatibility of MTA. Further investigations to overcome the extended setting time due to the ELP incorporation are necessary

Biography

Sun-Young Kim has completed his PhD from Seoul National University (SNU). He is the Associate Professor of conservative dentistry, SNU School of Dentistry. He has published more than 25 papers in international journals and has been serving as an associate editor in Restorative Dentistry and Endodontics

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