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## Basic fibroblast growth factor regulates pyrophosphate/phosphate regulating gene expression in stem cells isolate from human exfoliated deciduous teeth

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Basic fibroblast growth factor (bFGF) play roles in stem cells isolate from human exfoliated deciduous teeth (SHEDs) maintenance and regulated cells differentiation. Moreover, bFGF signaling have an effect on mineralization by regulate pyrophosphate/phosphate balance in cells. From our previous study showed that under osteogenic differentiation, bFGF decreased *ALP* activity and mRNA expression also reduced nodule formation. The aim of present study was investigated the regulation of bFGF on osteogenic differentiation in SHED via pyrophosphate/phosphate regulating gene expression. SHEDs expressed mesenchymal stem cells surface markers (CD44, CD90, CD105) and differentiated into osteogenic and adipogenic lineage upon differentiation medium cultured. Exogenous bFGF reduced *ALP* mRNA expression and protein levels also inhibit bone nodule formation in osteogenic induction. SHEDs were maintained in osteogenic induction after 14 days, did not showed effect on *PPi/Pi* regulating gene (*ANKH*, *ENPP-1* and *PIT-1*), in contrast, bFGF mRNA expression was significantly decreased at 14 days and *ALP* mRNA expression was significantly increased at 3 and 7 days. Treating SHEDs with exogenous bFGF reduced *ALP* mRNA expression and significantly increased *ANKH* mRNA expression and this effect was rescued *ALP* and *ANKH* mRNA expression by FGFR inhibitor. Further, the intracellular mechanism implying the involvement of intermediate molecules pretreated with FGFR inhibitor and cycloheximide were up-regulated *ALP* mRNA expression and down-regulated *ANKH* mRNA expression at 24 hours. Notably, treating SHEDs with phosphate were enhanced calcium accumulation upon osteogenic induction 14 days whereas treating SHEDs with pyrophosphate were inhibited. In conclusion, bFGF enhanced *Pi/PPi* regulating gene expression in SHEDs.

### Biography

Nunthawan Nowwarote has completed her PhD at faculty of Dentistry, Chulalongkorn University, Thailand. She has worked at mineralize tissue research unit at faculty of dentistry, Chulalongkorn University for six years. She got poster award: 6<sup>th</sup> Hiroshima Conference on Education and Science in Dentistry 2015, 21-30 October 2015 at Hiroshima Japan by oral presentation and poster presentation in title basic fibroblast growth factor induced interleukin six expression by stem cell isolated from human exfoliated deciduous teeth.

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