# P1-11 Asiaticoside stimulates osteogenic differentiation of hPDL through Wnt pathway

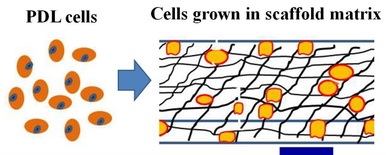

**Piyamas Sumrejkanchanakij[1,2], Atika Resti Fitri[1], Supakarn Chamni[3], Prasit Pavasant[1,2]**

[1]Mineralized Tissue Research Unit, Faculty of Dentistry, Chulalongkorn University, Bangkok, Thailand
[2]Department of Anatomy, Faculty of Dentistry, Chulalongkorn University, Bangkok, Thailand
[3]Department of Pharmacognosy and Pharmaceutical Botany, Faculty of Pharmaceutical Sciences, Chulalongkorn University, Bangkok, Thailand

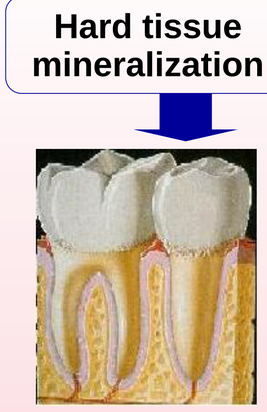

## Introduction

**Extensive periodontal tissue loss**

**Periodontal tissue regeneration**



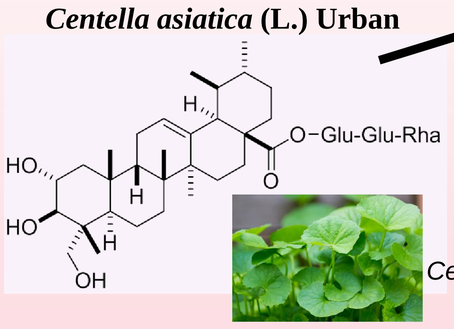

**Hard tissue mineralization**



**Wnt/β-catenin signaling**
(Hayrapetyan et al., 2015; Monroe et al. 2012)

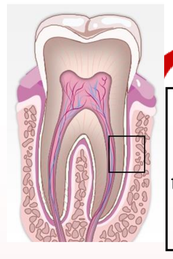
**Involved in many cellular processes including osteogenic differentiation**

**Asiaticoside isolated from Herb *Centella asiatica* (L.) Urban**





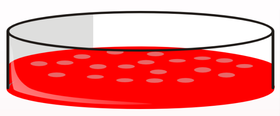

*Centella asiatica* (L.) Urban



Periodontal tissue scraped from the middle 1/3 of the tooth root

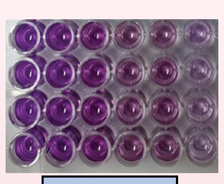
**Sample preparation**

Maintained in DMEM supplemented with 10% FBS (10% DMEM)



Human periodontal ligament (hPDL) cells subcultured in 10% DMEM until confluent

**Asiaticoside preparation**
✓ Asiaticoside was purchased from Sigma Aldrich (#43191)



**MTT Assay**

RNA extraction

**Quantitative real time PCR analysis for *OSX, RUNX2, DMP1, DSPP, WNT3A, WNT3B, WNT5A, WNT10B, DKK1,AXIN2,* and *β-CATENIN***

**ALP activity Alizarin Red staining**

**Immuno fluorescence**

**Nuclear/ Cytoplasmic fraction**

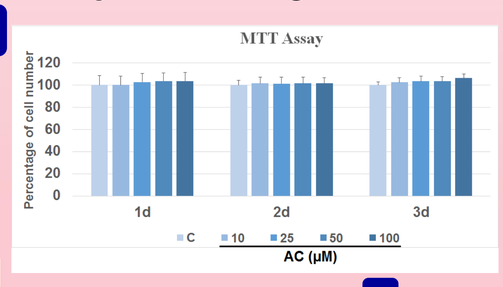
**Whole cell lysate**

**Western blot**

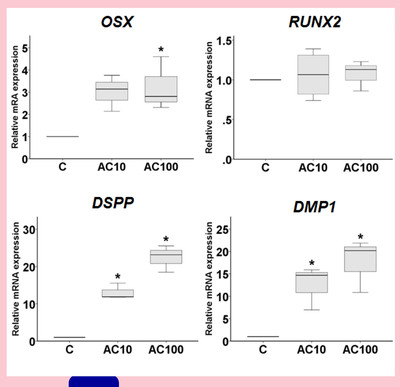
## Results

### 1. Effect of asiaticoside on hPDL cell viability and osteogenic differentiation

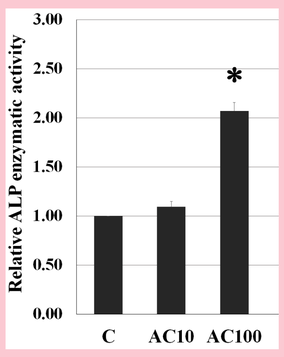
**A**



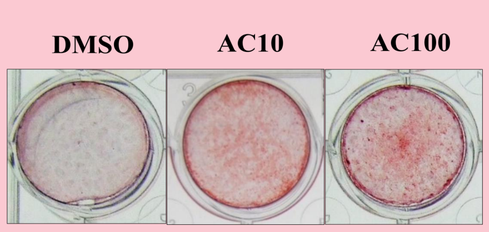

**B**




**C**

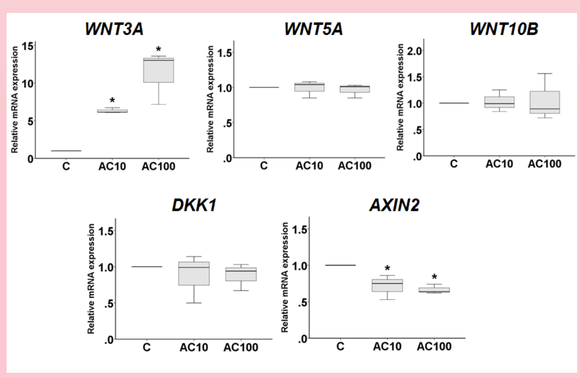



**D**

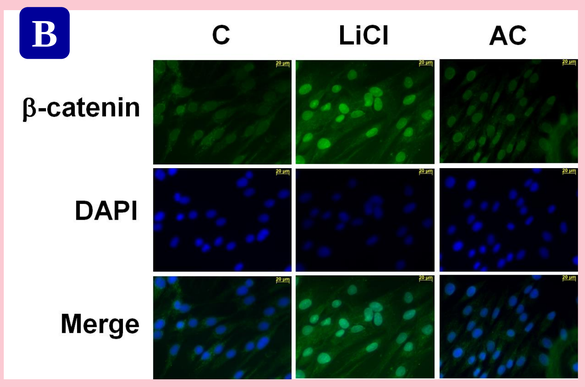



### 2. Asiaticoside activated Wnt signaling in hPDL cells

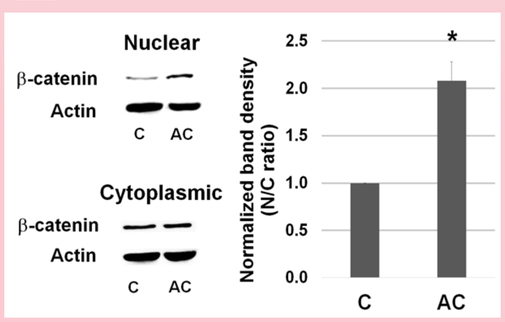
**A**



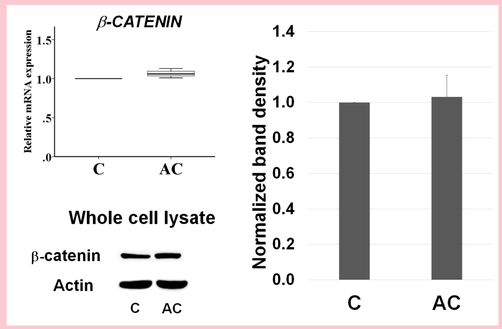

**B**




**C**

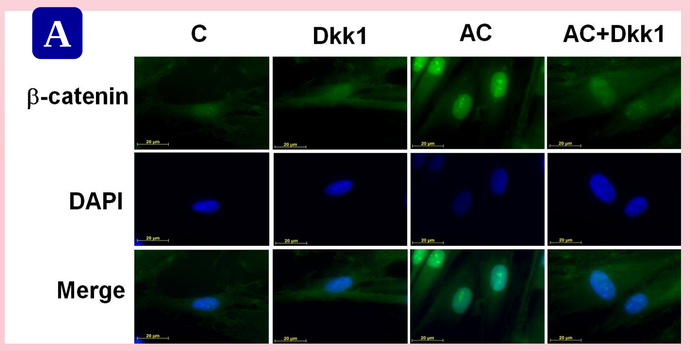



**D**

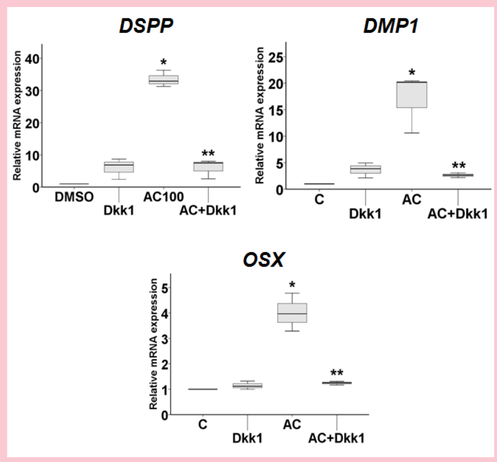



### 3. rh-Dkk1 attenuated the effects of asiaticoside induced Wnt signaling activation

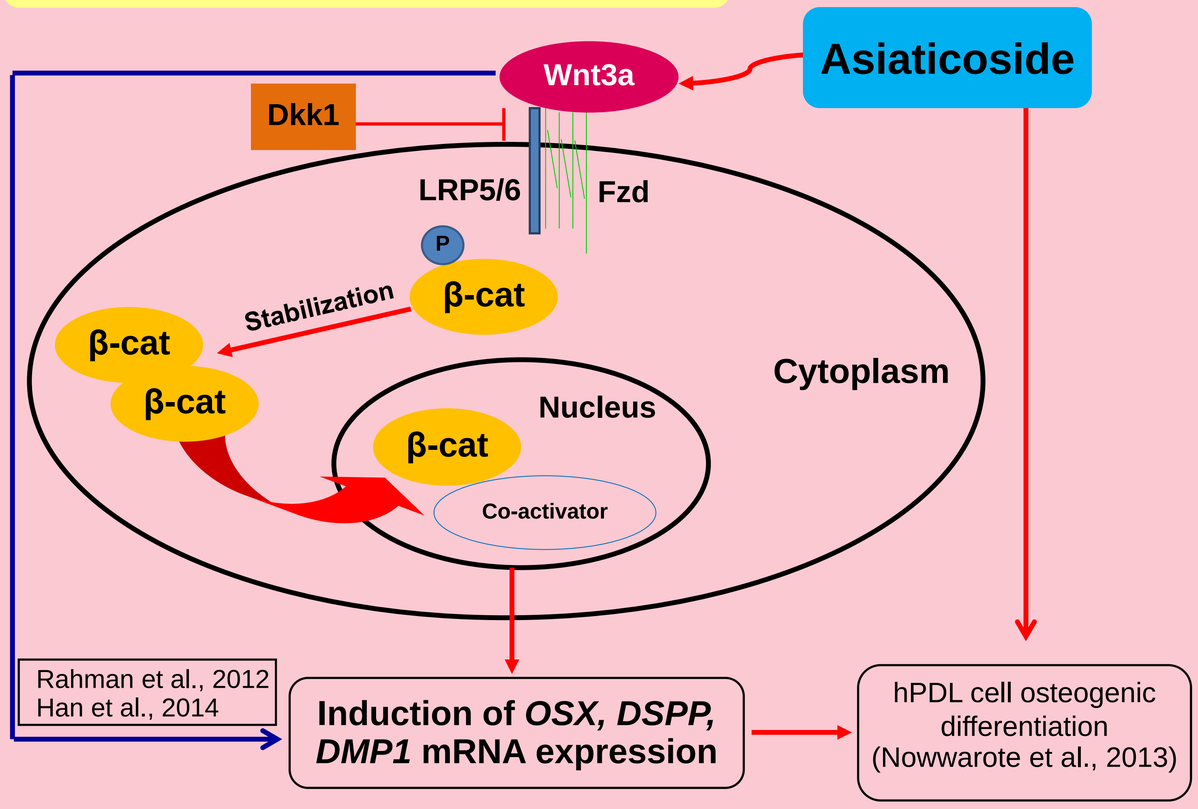
**A**




**B**




## Discussion




## Conclusion

The present study demonstrates that asiaticoside induces osteogenic differentiation of hPDL cells by activating the Wnt/*β-catenin* signaling pathway. Understanding the mechanism of asiaticoside action will help in developing novel therapeutic drugs for periodontal tissue regeneration.

## Acknowledgments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## References


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