Gingipain is involved in alternative splicing of Programmed death ligand 1 in *Porphyromonas gingivalis*-infected macrophage

1）Zheng Yilin、2）Wang Ziyi、3）Weng Yao、1）Sitosari Heriati、1）He Yuhan、1）福原瑤子、1）池亀美華、1）岡村裕彦

1）岡山大学・学術研究院医歯薬学域・口腔形態学分野

2）岡山大学・学術研究院医歯薬学域・インプラント再生補綴学分野

3）岡山大学・学術研究院医歯薬学域・分子医化学分野

Porphyromonas gingivalis (*P. gingivalis*) is a primary bacterium responsible for periodontal disease. *P. gingivalis* is also thought to have the ability to escape from local immune system. *P. gingivalis* possesses a unique virulence factor called gingipain which plays a role in immune modulation. In this study, we investigated the impact of *P. gingivalis* infection on the alternative splicing pattern of Programmed death ligand 1 (PD-L1/CD274) in macrophages. PD-L1 has the functional domain in its exon 3 to inhibit T cell function by binding to Programmed Cell Death Protein (PD-1). RNA-seq analysis revealed that PD-L1 functional isoform with exon 3 was prominently upregulated in macrophage THP-1 cells infected with *P. gingivalis* compared to intact cells. RT-PCR and qPCR analysis revealed that gingipain-knockout *P. gingivalis* has less ability to induce PD-L1 functional isoform in these cells. These results indicate that gingipain has an important role in PD-L1 alternative splicing in macrophages. Gingipain is thought to be a key factor for *P. gingivalis* to avoid from the immune system through PD-L1 alternative splicing in macrophages.