

## R-14. Inhibitory effect of procyanidin oligomer from elm cortex on the matrix metalloproteinases and proteases of periodontopathogens

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### 연구배경

Host-derived matrix metalloproteinases (MMPs) and bacterial proteases play important roles in the gingival tissue destruction that is a characteristic of periodontitis. The inhibitors of these proteases may be developed into therapeutic agents against periodontitis. The purpose of this study was to evaluate a partially purified extract (elm extract) from the Ulmi cortex (*Ulmi macrocarpa* Hance) and its active ingredient, a mix of procyanidin oligomers (3 to 12 flavan-3-ol monomers, an average molecular weight of 1,518 with an average polymerization degree of 5.3) for a possible inhibitory effect against proteases.

### 연구방법 및 재료

The inhibitory effects were assessed by gelatin zymography. The MMPs tested were originated from the gingival crevicular fluid (GCF) of adult periodontitis patients and from the conditioned media of cultured periodontal ligament (PDL) cells, which provided the proMMP-2 and activated MMP-2 when treated with a periodontopathogen, *Treponema lecithinolyticum*. Bacterial enzymes tested were secreted forms from two major periodontopathogens, *Porphyromonas gingivalis* and *Treponema denticola*. In addition, the inhibitory effects on trypsin-like enzymes from these two periodontopathogens were assayed by the n-benzoyl-DL-arginine-naphthylamide (BANA) test.

### 연구결과

The elm extract and the procyanidin oligomer (100-1,000 $\mu$ g/ml) exhibited potent inhibitory effects on

the MMPs in GCF (chiefly MMP-8 and MMP-9), the pro and active forms of MMP-2, and secreted and trypsin-like enzymes from *T. denticola* and *P. gingivalis*.

## 결론

These results suggest that elm cortex should be considered as a potential agent against periodontal diseases, due to its inhibitory action on MMPs and the proteases of periodontopathogens.

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