

OUTER MEMBRANE PROTEIN OF PORPHYROMONAS GINGIVALIS AS BASIC OF DIAGNOSTIC TOOL IN AGGRESSIVE PERIODONTITIS

(PROTEIN MEMBRAN BAGIAN LUAR PORPHYROMONAS GINGIVALIS SEBAGAI ALAT DIAGNOSTIK PERIODONTITIS AGRESIF)

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Abstract

Porphyromonas gingivalis is a gram-negative anaerobic bacteria and has been shown previously to be one of the major pathogens in aggressive periodontitis. Outer membrane protein is the major virulence factor of *P. gingivalis* and plays role in the host immune response impair againsts *P. gingivalis*, which in turns, causing tissue destruction and bone resorption. This study was aimed to investigate the isolation and characteristic outer membrane protein of *P. gingivalis*. Protein of OMP *P. gingivalis* ATCC 33277 was isolated using sodium dodecyl sulphate polyacrylamide gel electrophoresis (SDS-PAGE) and then continued by hemagglutination test. The result showed that protein profil in SDS-PAGE of OMP protein was 40 kDa molecular weight dan hemagglutination test was positive in titer of hemagglutination 1/8. In conclusion, outer membrane protein molecular mass of 40kDa produced by *P. gingivalis* is a key virulence factor involved in the co-aggregation activity of *P. gingivalis*

Key words: polyclonal antibody, *Porphyromonas. gingivalis*, outer membrane protein

INTRODUCTION

Periodontitis is a chronic immunoinflammatory disease of the periodontium that results a progressive loss of gingival tissue, the periodontal ligament, and adjacent supporting alveolar bone. Chronic inflammation of the periodontium is initiated by complex subgingival biofilms containing several likely periodontal pathogens. The biofilm generally contains a portion of the gram negative anaerobic commensal microbiota as well as opportunistic pathogens of the oral cavity, including *Porphyromonas gingivalis*.¹

Black-pigmented anaerobe is a pathogen bacteria group in oral cavity and related with gingivitis, periodontitis, endodontic infection and odontogenic abscess. *P. gingivalis* and *P. intermedia* are one of the *black-pigmented* anaerobe bacteria. They are pathogen bacteria in early and advanced periodontal disease.²

Outer membrane protein (OMP) bacteria of *P. gingivalis* caused the increasing of humoral immune response, so it can stimulate inflammatory cytokine

expression, such as TNF- α , IL-1 β , and IL-6 in monocyte and fibroblast of gingiva. It also induced bone resorption activity.³

Imai et al. reseach⁴ showed outer membrane protein found in negative gram bacteria is RagA, RagB and OMPA-like protein. RagB has the strongest virulent ability in periradicular lesion subject. Whole cell of *P. gingivalis* bacteria, cell extract or OMP immunization can reduce periodontal tissue destruction that caused by *P. gingivalis* bacteria. Rat's study showed that 40 kDa OMP antibody is potential to kill *P. gingivalis* bacteria.⁵

The aim of this study was to investigate the isolation and characteristic outer membrane protein of *P. gingivalis* bacteria as the making dot enzyme immunoassay (EIA) material to examine aggressive periodontitis.

MATERIALS AND METHODS

This study was done at the Microbiology Laboratory of Dental Faculty, Jember University and