• 系統編號	RN9511-2132
• 計畫中文名稱	侵入型及非侵入型 Porphyromonas gingivalis 調控人類血管內皮細胞介白質-6 及其接受器(IL-6, gp130)之表現及其訊息傳遞之研究
• 計畫英文名稱	Regulation of IL-6, IL-6 Receptor and gp130 Expression and Signaling in Human Endothelial Cells Infected with Invasive/Noninvasive Porphyromonas gingivalis
• 主管機關	行政院國家科學委員會
• 計畫編號	NSC93-2314-B038-039
• 執行機構	臺北醫學大學牙醫學系
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• 使用語言	中文
• 研究人員	周幸華; 賴銘堂; 何元順 Chou, Hsin-Hua; Lai, Ming-Tang; Ho, Yuan-Soon
• 中文關鍵字	--
• 英文關鍵字	Porphyromonas gingivalis, IL-6, IL-6 receptor, gp130
• 中文摘要	牙周病是經由 Porphyromonas gingivalis 感染所引發的慢性發炎反應，近年來許多文獻報導指出，牙周病會增加患者罹患心血管疾病的機率，發炎反應的三個指標：C-reactive protein(CRP)、fibrinogen(Fb)、Interleukin-6 皆對於增加心衰竭與中風之危險有相關聯性；其中 interleukin-6 又爲冠狀動脈疾病的獨立性危險因子。本研究藉由探討人類臍靜脈內皮細胞在受到牙周病主要致病菌 Porphyromonas gingivalis(以下簡稱 381) 感染，誘發 interleukin-6 及其接受器表現之訊息傳遞來討論牙周病增加心血管疾病危險因子之機制。另外，利用另一突變菌株 insertionally inactivated fimA(fimAmutants，以下簡稱 DPG3)，比較細胞受到侵入型與非侵入型細菌感染後訊息傳遞機制之差異。結果顯示， 細胞分別受到兩菌株感染後皆可誘發 interleukin-6 產生及調控 IL-6 receptor complex(IL-6α、gp130)的表現，但是兩者有程度上的差異。在我們的結果顯示 JAKs/STAT3 路徑只參與在由 381 所調控的 receptor 表現。在我們的實驗模式中， 經由牙周病致病菌 P.gingivalis 感染人類臍靜脈內皮細胞後誘導 IL-6 的產生並且調控 IL-6 receptor 的表現造成訊息傳遞的迴路，使得細胞本身自我調控產生 IL-6 的大量分泌；然而，過度的刺激會讓免疫反應所造成的損害性大過於修復性。因此，藉由探討牙周病菌對於臍靜脈細胞的感染發炎機制，可進一步的了解牙周病與心血管疾病間的相關聯性，並期望在將來可由致病機轉中找出減低牙周病患者罹患心血管疾病的危險
• 英文摘要	Porphyromonas gingivalis is an oral pathogen that causes a chronic local inflammatory disease, periodontal disease, which results in

the destruction of the periodontal ligament and alveolar bone. Recent studies have focused on the association of P. gingivalis-mediated periodontal infection and systemic diseases. Several reports support a definite relationship between periodontal infections and certain systemic conditions including atherosclerosis and cardiovascular disease. Therefore, markers of systemic inflammation, such as C-reactive protein (CRP), fibrinogen, different cytokines; especially interleukin-6 (IL-6) have been studied as potential new risk factors. It has established that the periodontal pathogen Porphyromonas gingivalis is capable of invading aortic, heart, and human umbilical vein endothelial cells (HUVEC). Interactions of P. gingivalis with endothelial cells and the subsequent host cell response to infection may be important in the pathogenesis of atherosclerosis. In this study, we coculture HUVEC with live P. gingivalis strain, 381, and insertionally inactivated fimA mutant, DPG3 respectively to compare the results. We demonstrated that P. gingivalis upregulated IL-6 and IL-6 receptor in HUVEC. The results showed that both P. gingivalis strains can modulate IL-6 expression in endothelial cell, but there is difference in the expression level. Our data showed that STAT3 activation was only involved in 381-regulated IL-6 receptor expression. Our results revealed the signaling pathway involved in regulation of IL-6 receptor complex expression in HUVEC by invasive and non-invasive P. g. Our data showed an experimental link between P. gingivalis infection and vein endothelial cells. It would activate IL-6 signaling transduction and result in excess IL-6 production in HUVEC infected by P. g. The results suggested that P. gingivalis infection would induce inflammatory response in endothelial cells; therefore accelerates atherosclerotic changes.