

## Research Article

# Periodontal Treatment Improves Serum Levels of Leptin, Adiponectin, and C-Reactive Protein in Thai Patients with Overweight or Obesity

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Periodontitis and overweight or obesity independently change serum levels of leptin, adiponectin, and C-reactive protein (CRP). The aim of this study is to investigate the alterations of serum levels of leptin, adiponectin, and CRP after nonsurgical periodontal treatment (NSPT) in Thai patients with overweight or obesity (Owt/Ob) who did or did not exhibit severe periodontitis (SP) and normal weight (Nwt) patients with or without SP. Two hundred sixty patients were screened; 29 patients were included in this study. The study participants comprised 6 patients with Owt/Ob who exhibited SP, 11 patients with Owt/Ob who did not exhibit SP, 5 Nwt patients with SP, and 7 Nwt patients without SP. Periodontal disease status was evaluated; serum levels of leptin, adiponectin, and CRP were determined by enzyme-linked immunosorbent assay at baseline, as well as at 3 and 6 months after NSPT. At 3 months after NSPT, periodontal status was improved in all groups ( $p < 0.05$ ), except Nwt patients without SP. Serum levels of leptin and CRP were significantly reduced, while serum levels of adiponectin were elevated after NSPT, regardless of bodyweight or waist circumference ( $p < 0.05$ ). Improvement in serum levels of leptin after NSPT was also observed in the Nwt with SP group ( $p = 0.015$ ); these levels did not significantly differ in Nwt patients without SP. NSPT reduces serum levels of leptin and CRP and enhances serum levels of adiponectin in Thai patients with Owt/Ob, irrespective of periodontitis severity. These results suggest a role for periodontal treatment in the systemic inflammatory response of Thai people with Owt/Ob.

## 1. Introduction

Overweight (Owt) and obesity (Ob) are highly prevalent chronic diseases in Thailand and worldwide [1, 2]. During the development of obesity, adipocytes dysregulate adipokine production, which contributes to local and systemic inflammation and disturbances in glucose homeostasis [3], and these These adipokines include proinflammatory cytokines (e.g., leptin, tumor necrosis factor- $\alpha$ , and interleukin-6) and anti-inflammatory cytokines (e.g., adiponectin), all of which have multiple metabolic balance functions [3, 4].

Furthermore, delivery of increased levels of the tumor necrosis factor- $\alpha$  and interleukin-6 to the liver may cause liver inflammation and contribute to elevated production of C-reactive protein (CRP) [5]. Therefore, Ob, associated with a chronic low-grade systemic inflammatory state, is considered a predisposing factor for a variety of diseases, including cardiovascular disease and type 2 diabetes mellitus [1, 3].

In addition to its presence in people with Owt or Ob, chronic inflammation in the body may be found in patients with periodontitis, a major source of oral inflammation [3]. Many previous studies have shown elevated levels of serum