The impact of smoking status on antioxidant enzyme activity and malondialdehyde levels in chronic periodontitis. Tonguç MÖ, Öztürk O, Sütçü R, Ceyhan BM, Kılınç G, Sönmez Y, Yetkin Ay Z, Sahin U, Baltacıoğlu E, Kirzıoğlu FY. Department of Periodontology, Faculty of Dentistry, Suleyman Demirel University, Isparta, Turkey.

Abstract BACKGROUND:

The aim of this study is to investigate the impact of smoking status on the systemic and local superoxide dismutase (SOD), glutathione peroxidase (GSH-Px), and catalase (CAT) activities and malondialdehyde (MDA) levels in subjects with chronic periodontitis (CP).

METHODS:

Sixty-five CP patients (23 smokers [CP-S], 23 former smokers [CP-FS], and 19 non-smokers [CP-NS]) and 20 periodontally healthy non-smoker controls (PH-NS) were included in the study. After the clinical measurements, serum and gingival tissue samples were collected. SOD, GSH-Px, and CAT activities and MDA levels in hemolysates and gingival tissue samples were spectrophotometrically assayed.

RESULTS:

Blood MDA levels in all the periodontitis groups were higher than in the PH-NS group but only the difference between CP-FS and PH-NS groups was significant (P <0.01). Gingival tissue MDA levels in the periodontitis groups were significantly higher than that in the control group (P <0.01). However, the control group had the highest gingival SOD, GSH-Px, and CAT activities compared with all the periodontitis groups (P <0.01). The CP-S group had the highest gingival MDA levels and SOD, GSH-Px, and CAT activities among the periodontitis groups, whereas the lowest values were observed in the CP-NS group (P <0.01). The blood and gingival MDA levels in the CP-FS group were similar in the CP-NS group, whereas they were lower than in the CP-S group.

CONCLUSIONS:

Systemic and local MDA levels are increased by smoking in addition to the impact of periodontitis. The decreased local SOD, GSH-Px, and CAT activities observed in periodontitis patients may increase with smoking.

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