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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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