BACKGROUND:

This study aimed to investigate the effects of a 2% cholesterol-enriched diet on alveolar bone loss (ABL) and the serum levels of pro-oxidants and anti-oxidant enzymes, in rats with experimental periodontitis.

METHODS:

The rats were randomized into the following groups: Group C (standard diet / periodontally healthy), Group Hc (high-cholesterol diet), Group HcP (high-cholesterol diet / periodontitis), Group P (standard diet / periodontitis). All rats were fed for 8 weeks. At 6 weeks, experimental periodontitis was induced. At the end of the 8th week, the rats were sacrificed. Histomorphometric and histopathological analysis were performed. The malondialdehyde (MDA), nitric oxide (NO), superoxide dismutase and glutathione peroxidase (GPX) levels in serum were measured with ELISA.

RESULTS:

The experiment groups exhibited increases in total cholesterol, low density lipoprotein, and high density lipoprotein compared with the C group. The cholesterol-enriched diet induced ABL in the Hc group. The HcP and P groups had more extensive ABL. The most polymorphonuclear leukocyte infiltration in periodontal tissues was found in the HcP group. MDA in all experiment groups were higher than that of the C group but only in the HcP group was significant. High cholesterol diet, with or without periodontitis resulted in more decreases in GPX and more increases in NO compared to the P group.

CONCLUSION:

However any additive effect of cholesterol-enriched diet to ABL was not found in rats with ligature-induced experimental periodontitis, these findings revealed that a cholesterol-enriched diet could lead to ABL and increase in periodontal inflammation and serum pro-oxidants.