

Bergamot Juice extract treatment improved inflammatory process associated with periodontitis induced by lipopolysaccharide (LPS) injection.

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Bergamot (*Citrus bergamia* Risso), is a fruit of the province of Southern Italy. It is commonly used for the extraction of the essential oil from the peel. For its antibacterial and antiseptic properties Bergamot Juice extract (BJe) is widely use in the pharmaceutical industry. In our study we investigated the effects of BJe in rats subjected to experimental periodontitis. The periodontal disease is an infection produced by the accumulation of bacteria that colonize the below the gingival margin or the tooth surface. Periodontitis was induced in rats by a single intragingival injection of 1 μ l LPS (10 μ g/ μ l) derived from *Salmonella typhimurium*. Fourteen days after LPS injection the gingivomucosal tissue surrounding the mandibular first molar was excised for histological and biochemical analysis. LPS significantly induced edema, tissue damage and increased neutrophil infiltration. NF- κ B translocation were increased as well as TNF- α and IL-1 β expression. The increase of myeloperoxidase activity was associated with up-regulation of adhesion molecules. Immunohistochemical analysis for nitrotyrosine and poly ADP-ribose also displayed an intense staining in the gingivomucosal tissue. In addition, periodontal disease was associated with apoptotic damage. We report here that BJe administration reduced tissue injury and nuclear NF- κ B translocation, cytokines expression. BJe treatment also reduced myeloperoxidase activity and the expression of some adhesion molecules such as ICAM and P-selectin. It also reduced the nitrosative stress and PARP positive staining. BJe administration caused down-regulation of Bax levels and up-regulation of Bcl-2 levels. Taken together, our findings evidently demonstrate that treatment with BJe reduces tissue injury and the development of inflammation, events associated with periodontal disease.