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GREEN TEA AND ITS MAJOR POLYPHENOL EPIGALLOCATECHIN 3-GALLATE INCREASE THE ACTIVITY OF ORAL PEROXIDASES

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Oral peroxidases (OPO) comprise mainly salivary peroxidase and myeloperoxidase and are involved with the oral defense mechanisms. Salivary peroxidase is synthesized and secreted by the salivary glands, whereas myeloperoxidase is found in the polymorphonuclear leukocytes, which migrate into the oral cavity at gingival crevices [1]. Green tea is the world second popular drink after water. Polyphenols are the most biologically active group of tea components [2]. The purpose of our study was to elucidate the outcome of interaction between green tea and its main polyphenol, epigallocatechin 3-gallate (EGCG), and OPO. In previous studies we found that elderly persons who exercise and who had been drinking green tea for 3 months, had a higher level of OPO activity compared with non-exercising ones. Thus we decided to embark on a project to try to understand the above observations by studying the interaction of green tea and OPO in both in vitro and in vivo. Addition of green and black tea extracts (50 ?l/ml) and EGCG (50 ?M) to saliva, in vitro, resulted in a sharp rise of OPO activity by 280% ($P<0.009$), 54% ($P<0.04$), and 42% ($P<0.009$), respectively. The elevation of OPO activity due to addition of green tea and EGCG was dose-dependent: $r=0.91$ ($P=0.001$) and $r=0.64$ ($P=0.019$), respectively. Likewise, in the in vivo studies of gurgling green tea administration, a significant 268% rise in OPO activity was observed. These results may be of great clinical importance, as tea consumers' oral epithelium may have greater protection against the deleterious effects of hydroxyl radicals produced by unremoved hydrogen peroxide in the presence of metal ions [3]. Higher OPO activity resulting from green tea drinking provides extra protection against oxidative stress in the oral cavity.

References:

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