The antioxidant action of Polypodium leucotomos extract and kojic acid: reactions with reactive oxygen species.

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Two natural products Polypodium leucotomos extract (PL) and kojic acid (KA) were tested for their ability to scavenge reactive oxygen species (.OH,.O2-, H2O2, 1O2) in phosphate buffer. Hydroxyl radicals were generated by the Fenton reaction, and the rate constants of scavenging were 1.6 x 10(9) M-1 s-1 for KA and 1.0 x 10(9) M-1 s-1 for PL, similar to that of ethanol (1.4 x 10(9) M-1 s-1). With superoxide anions generated by the xanthine/hypoxanthine system, KA and PL (0.2-1.0 mg/ml) inhibited.O2- dependent reduction of nitroblue tetrazolium by up to 30 and 31%, respectively. In the detection of 1O2 by rose bengal irradiation, PL at 1.0 mg/ml quenched singlet oxygen by 43% relative to azide and KA by 36%. The present study demonstrates that PL showed an antioxidant effect, scavenging three of four reactive oxygen species tested here. Unlike KA, PL did not significantly scavenge hydrogen peroxide.

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