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Antioxidative activity of peony root

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The ethanol extract of peony root (Paeonia Lactiflora Pall, Paeoniaceae) and its major active components including gallic acid and methyl gallate were evaluated for their protective effects against free radical generation and lipid peroxidation. And protective effects against hydrogen peroxide-induced oxidative DNA damage in a mammalian cell line were performed. The ethanol extract of peony root (PRE), gallic acid and methyl gallate were shown to possess the significant free radical scavenging effect against 1,1-diphenyl-2-picryl hydrazine (DPPH) radical generation and were revealed the inhibitory effect of lipid peroxidation as expressed by malondialdehyde (MDA) formation. They were also found to strongly inhibit hydrogen peroxide-induced DNA damage from NIH/3T3 fibroblasts, assessed by single cell gel electrophoresis. Furthermore, oral administration of 50% PRE (50% ethanol extract), gallic acid and methyl gallate potently inhibited micronucleated reticulocyte (MNRET) formation of mouse peripheral blood induced by KBrO3 treatment in vivo. Therefore, PRE containing gallic acid and methyl gallate may be a useful natural antioxidant by scavenging free radicals, inhibition of lipid peroxidation and protecting oxidative DNA damage.