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In vitro antioxidant studies and free radical reactions of triphala, an ayurvedic formulation and its constituents.

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Abstract

The aqueous extract of the fruits of Emblica officinalis (T1), Terminalia chebula (T2) and Terminalia belerica (T3) and their equiproportional mixture triphala were evaluated for their in vitro antioxidant activity. gamma-Radiation induced strand break formation in plasmid DNA (pBR322) was effectively inhibited by triphala and its constituents in the concentration range 25-200 microg/mL with a percentage inhibition of T1 (30%-83%), T2 (21%-71%), T3 (8%-58%) and triphala (17%-63%). They also inhibited radiation induced lipid peroxidation in rat liver microsomes effectively with IC(50) values less than 15 microg/mL. The extracts were found to possess the ability to scavenge free radicals such as DPPH and superoxide. As the phenolic compounds present in these extracts are mostly responsible for their radical scavenging activity, the total phenolic contents present in these extracts were determined and expressed in terms of gallic acid equivalents and were found to vary from 33% to 44%. These studies revealed that all three constituents of triphala are active and they exhibit slightly different activities under different conditions. T1 shows greater efficiency in lipid peroxidation and plasmid DNA assay, while T2 has greater radical scavenging activity. Thus their mixture, triphala, is expected to be more efficient due to the combined activity of the individual components.

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