

Recent Reports of Plants as DNA Protection Agents

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Background: DNA damage induced by reactive oxygen species (ROS) leads to cell death, tissue damage and may contribute towards the onset of several chronic diseases.

Objective: Plants carry a cocktail of compounds like flavonoids, polyphenolics, tannins, saponins, terpenoids, and alkaloids that have shown promising pharmacological potential in treating various illnesses responsible for high mortality. Some of the plant-derived compounds carry the potential to shield the DNA from damage induced by reactive oxygen species (ROS). The objective of this article is to present recent reports of plant extracts and natural products as DNA protecting agents in one place.

Methods: This review summarizes the plant-based extracts and isolated compounds with promising DNA protection activities against ROS induced damage. The antioxidant potential of plants is assessed using various antioxidant assays like DPPH assay, FRAP assay, and H₂O₂ assay. Further, the DNA protection of the extract is validated by using a plasmid protection assay. The mechanism of protection generally involves the scavenging of ROS by the antioxidants present in plant extracts.

Results and Conclusion: This review summarizes the work done on plant-based compounds for their antioxidant and DNA protection abilities *in vitro*. However, *in vivo* evaluation of promising plants is the need of time.

Keywords: Reactive oxygen species, antioxidants, DNA protection, plant extract, natural products, DNA damage.