

STUDY ON THE ANTIOXIDANT, CYTOTOXIC ACTIVITIES AND PHYTOCHEMICAL ANALYSIS OF *SYZIGIUM ZEYLANICUM* (LINN) DC

ABSTRACT

Objectives: To determine the antioxidant, cytotoxic activities and phytochemical analysis of methanolic extract of *S. zeylanicum* leaves, root and fruits. TLC and HPTLC analysis were also done to compare the extracts.

Methods: The antioxidant activity was determined by using DPPH radical, ABTS radical, superoxide radical and nitric oxide radical scavenging assays. The *in vitro* cytotoxicity was done against DLA cell line. Phytochemical analysis was done using qualitative chemical tests.

Results: The antioxidant results were expressed in their IC₅₀ values. The DPPH radical was effectively scavenged by all the extracts. The IC₅₀ values obtained the root extract was 13 µg/ml, fruit extract with 17 µg/ml and leaf extract with 19.5 µg/ml. ABTS radical scavenging activities showed promising and potent free radical scavenging activity as per their IC₅₀ values. The root extract showed an IC₅₀ value of 14.5 µg/ml, fruit extract with 17.5 µg/ml and the leaf extract with 18.5 µg/ml. Superoxide radical scavenging activities by fruit extract showed more activity with an IC₅₀ value of 130 µg/ml followed by root extract with IC₅₀ value 140 µg/ml. The leaf extract showed the least activity with 190.5 µg/ml IC₅₀ value. The extracts were found to be more effective in scavenging hydroxyl radical. The IC₅₀ value of root extract was 190 µg/ml, leaf extract 225 µg/ml and fruit extract 245 µg/ml. The extracts were tested *in vitro* for their toxic effect on mouse cancer cell line DLA. Against DLA cells the leaves and fruit extract showed only 15% and 10% cell death respectively up to 200 µg/ml extract treatment. While the root extract showed an IC₅₀ value of 84 µg/ml. Preliminary phytochemical analysis of the leaf, fruit and root extracts revealed the presence of carbohydrate, terpenes, steroids, polyphenols, flavonoids, glycosides in all the three extracts. The TLC analysis done using the extract showed the presence of various compounds differ in their R_f values. The HPTLC analysis done and the chromatograms were produced in different wavelengths. The chromatogram produced bands of various compounds in all the three extracts. All the extracts showed similar phytochemicals with same R_f and also compound that were different in their R_f values.

Conclusions: The data obtained from the present study suggests that the extracts of *S. zeylanicum* have potent antioxidant activity against free radicals, prevent oxidative damage to major biomolecules and afford significant protection against oxidative damage. The analysis revealed only minor variations in the antioxidant activities of the extracts. Phytochemical studies showed the presence of alkaloids, glycosides, phenolics, flavonoids, steroids and terpenoids. The TLC and HPTLC analysis also showed the presence of similar as well as different phytochemicals in the three extracts. Hence, the antioxidant and cytotoxic activity of the extracts may be due to the presence of this valuable group of phytochemicals.