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Bioactivity studies of *Allium sativum* and *Trigonella foenum-graecum*

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Spices have been valued for their flavoring and medicinal properties for thousands of years. *Trigonella foenum-graecum* (Fenugreek) is an herb, and *Allium sativum* (Garlic) is a bulbous plant, both have a strong pungent flavor and aroma. This study was carried out to determine the bioactivities of different extracts of *A. sativum* cloves and *T. foenum-graecum* seeds. Samples were purchased from the local market, air-dried, and ground to powder using a home-use grinder. Powdered spices were sequentially extracted into dichloromethane (CH₂Cl₂) and methanol (MeOH) by sonicating for 30 minutes and repeated two times. Filtrate was combined and evaporated to obtain crude extracts. Fenugreek CH₂Cl₂ extract was separated as solid (FG/CH/S) and oil (FG/CH/O). Extracts were subjected to DPPH radical scavenging activity, brine shrimp lethality bioassay using *Artemia salina*, phytotoxicity against germination of lettuce seeds (*Lactuca sativa*) and enzyme inhibitory assays against α -amylase and lipase enzymes for 1000 mg L⁻¹ to 31.25 mg L⁻¹ concentrations for each extract. The results showed that the CH₂Cl₂ extract of garlic (AS/CH) exhibited the highest DPPH radical scavenging activity with an IC₅₀ value of 160.33 mg L⁻¹ and FG/CH/S and FG/CH/O did not show any antioxidant activity. The MeOH extracts of fenugreek (FG/ME) and garlic (AS/ME) showed IC₅₀ values of 579.70 mg L⁻¹ and 597.17 mg L⁻¹ respectively for antioxidant activity. FG/ME extract exhibited IC₅₀ values of root(R) and shoot(S) inhibition in phytotoxicity assay with 304.39 mg L⁻¹ and 662.87 mg L⁻¹ respectively. Neither FG/CH/S nor FG/CH/O extracts showed considerable phytotoxicity against the germination of lettuce seeds. AS/CH showed IC₅₀ values of R=132.41 mg L⁻¹, S=157.06 mg L⁻¹ respectively. AS/ME was not active for phytotoxic activity. The FG/CH/S extract showed results of cytotoxicity against *Artemia salina* with an IC₅₀ value of 492.98 mg L⁻¹. The AS/CH extract and AS/ME extract showed IC₅₀ values of 100.82 mg L⁻¹ and 192.04 mg L⁻¹ respectively. None of these extracts showed significant enzyme-inhibitory activity against α amylase and lipase enzymes. *A. sativum* cloves and *T. foenum-graecum* seeds are suggested as prospective sources for medicinal usage.

Keywords: Antioxidant activity, cytotoxicity, fenugreek, garlic, phytotoxicity