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Analysis of Chemical Composition by GC-MS and *In-vitro* Antidiabetic Activity of *Azadirachta indica* Leaves Collected from Erbil, Iraq

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ABSTRACT

Background: *Azadirachta indica* (Neem) is an important medicinal plant which is traditionally known for its insecticidal and pharmacological properties.

Methods: The objective of this study was to evaluate *in-vitro* antidiabetic activity and characterize the chemical constituents in ethyl acetate extract of the leaves of neem by using GC-MS. The *in-vitro* antidiabetic activity of neem extract was evaluated *via* inhibition of α-amylase and α-glucosidase enzymes.

Results: GC-MS analysis of the ethyl acetate extract of neem resulted in the identification of 49 chemical compounds and these constituents accounted to 97.07% of total composition. The major chemical components of the neem were octadecanoic acid (7.17%), propyl tetracosyl ether (5.35%), 1-decanol, 2-octyl (5.01%), hexadecane (4.70%), tricosane (4.73%), octadecane, 1-chloro (4.65%), and linolenic acid (4.35%). The neem extract produces dose dependent inhibition of α-amylase and α-glucosidase enzymes. The IC_{50} values for neem extract and acarbose were 165.53±2.75 and 91.04±2.16 µg/mL, respectively against α-amylase enzyme. The IC_{50} values for neem extract and acarbose were 210.08±2.16 and 120.05±2.16 µg/mL, respectively against α-glucosidase enzyme.

Conclusion: The study confirms the traditional claim of its use in the treatment of diabetes mellitus.

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Aims & Scope

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