

Free radical quenching activity and polyphenolic constituents of *Anethum graveolens*

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ABSTRACT

Free radicals have been implicated in the etiology of a huge number of life threatening diseases. The most effective way to eliminate free radicals which cause oxidative stress is with the help of antioxidants. Antioxidants, exogenous or endogenous, synthetic or natural, can be effective in preventing free radical formation by scavenging them or promoting their decomposition thereby suppressing such disorders. Numerous studies have described the health beneficial, antioxidant potential and free radical scavenging abilities of plant polyphenols. In the present study, the medicinal plant *Anethum graveolens* belonging to the family Umbelliferae was selected to assess its *in vitro* antioxidant potential and polyphenolic constituents. This plant is a common household remedy against a variety of gastrointestinal disorders, also used as spices and condiments in foods for their flavour, aroma, and preservation. It is also a stimulant, emmenagogue and galactagogue. The essential oils of these plants have been reported to possess antimicrobial activity. Thus, to provide a scientific justification for these traditional remedies, the present study was planned to assess the antioxidant potential using aqueous and successive organic extracts in five different *in vitro* models for antioxidant studies. Phytochemical screening and HPLC determination of polyphenols were also carried out to identify the major active phytoconstituents. The preliminary phytochemical screening of the extracts of *Anethum graveolens* indicated the presence of flavonoids, glycosides, tannins and saponins while quinones and anthraquinones were absent. The *in vitro* antioxidant studies have proved the aqueous (AqAG) and methanolic (MAG) extracts of the plant to have maximum free radical scavenging effects. Hence they were subjected to HPLC analysis to determine the phenolic content. The results indicated both AqAG and MAG possessed a high content of polyphenols (7.03 and 7.45 mg/g), constituents being gallic acid, ellagic acid, vanillic acid, coumaric acid and ferrulic acid. A fair correlation between total phenolic content and *in vitro* antioxidant activity was thus observed.