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Full Length Research Paper

Free radical scavenging and antibacterial activity of essential oil and solvent extracts of *Iris planifolia* (Mill) from Algeria

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Free radical scavenging and antibacterial activity of essential oil and solvent extracts of *Iris planifolia* (Mill) was investigated. The essential oil was analyzed by Gas chromatography mass spectrometry (GC-MS) and a total of 38 types of volatile organics were identified. The essential oil consists chiefly of alkanes (36.5%), acids (19.1%), ketones (11.7%), alcohols (9.0%), arylpropanoids (6.8%) and aldehydes (4.1%) accompanied by relatively much smaller amounts of monoterpenes (1.0%). The antimicrobial activity of essential oil and ethanolic extract shows an important activity against *Salmonella typhimurium* and *Klebsiella pneumoniae* with minimum inhibitory concentration (MIC) of 3.12 mg/ml. Furthermore, the free radical scavenging assay of the essential oil and extracts were determined using a 2,2-diphenyl-1-picrylhydrazyl (DPPH) test system. The dichloromethane and water extract possessed strong radical scavenging activity with the lowest IC_{50} value of 0.1 mg/ml followed by the aqueous extract with an IC_{50} value of 0.12 mg/ml. Phytochemical analysis revealed the presence of flavonoids, terpenoids, saponins, alkalois and tannins which may be responsible for antimicrobial and antioxidant activities.

Key words: *Iris planifolia* (Mill), essential oil, GC, GC/MS, phytochemical prospecting, antimicrobial and free radical scavenging.

INTRODUCTION

Aromatic plants have long been part of Algerian cultures and their uses are wide spread in most of the rural people that rely on traditional therapies which involve the use of plant parts, their extracts, infusions and decoctions, especially in diabetes, high blood pressure, arthritis, fever and cancer (Quezel and Santa, 1963; Allali et al., 2008). That could be explained partially by the presence of wide variety of biologically active constituents. On the other hand, in modern medicine due to indiscriminate and irrational use of antimicrobial drugs the infectious microorganisms have developed resistance. Hence, new alternative are required to combat the existing diseases as infections and cancer. Plants produce a wide variety of secondary metabolites such as vitamins, terpenoids, tannins, flavonoids, alkaloids and other metabolites, which are rich in antimicrobial and antioxidant activities (Wong et al., 2006; Baker et al., 2010). A great number of different spices and aromatic herbs have been tested for their antioxidant and antimicrobial activities during the last decade; however, there are still many plants, which were not yet examined. The genus *Iris* belongs to family *Iridaceae*, consists of about 300 species and is distributed throughout the world except in the cold

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