

Sudan University of Science and Technology
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EXTRACTION AND ANALYSIS OF VOLATILE OIL OF
***FOENICULUM VULGARE* MILL.**

A Thesis Submitted in Partial Fulfillment of Master Degree in
Chemistry

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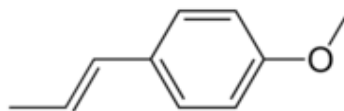
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Abstract

The volatile oil from the dry seeds of *Foeniculum vulgare* Mill., known in Sudan as *Elshamar*, was extracted by hydrodistillation. The volatile oil yield of was found to be 6 % (v/w). The extracted volatile oil was analyzed by gas chromatography (GC) and gas chromatography – mass spectrometry (GC-MS) to determine the chemical constituents. The retention indices of the major components were calculated from the GC analysis. From the GC-MS analysis 28 compounds (11 hydrocarbons and 17 oxygenated compounds) were identified. The main constituents of volatile oil were found to be: Anethole (I) 31.1%, phenyl-2-methyl-3-propanal 21.25%, d-limonene 12.13% β -pinene 9.63% γ -terpinene 8.03% and 2-carenal 8.71% and their retention indices are 1237.04, 1290.74, 1021.11, 976.98, 1060 and 1283.33 respectively.

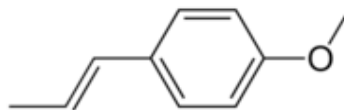


(I)

ملخص

فى هذه الدراسة تم استخلاص الزيت الطيار من نبات الشمار الذى يزرع فى منطقة المناصير فى شمال السودان بواسطة التقطير المائى. من التجربة وجد أن نسبة الزيت الطيار فى النبات 6% (حجم/وزن). تم تحليل الزيت المستخلص بواسطة كروماتوغرافيا الغاز بالإضافة الى كروماتوغرافيا الغاز الملحق بجهاز طيف الكتلة وذلك لتعيين المكونات الكيميائية. عين معامل الإحتجاز للمكونات الرئيسية للزيت عن طريق كروماتوغرافيا الغاز بينما تم التعرف على 28 مركب فى الزيت الطيار من تحليل كروماتوغرافيا الغاز الملحق بجهاز طيف الكتلة. 11 من هذه المركبات عبارة عن هيدروكربونات و17 منها مركبات تحتوى على الأوكسجين.

المكونات الأساسية للزيت الطيار حسب نسبة تواجده هى: الأنيثول (I) (31.1%) و2-ميثيل-3-فينيل بروبانال (21.25%) والليمونين (12.13%) وبيتا-بينين (9.63%) وقاما-تيربينين (8.03%) و2-كارينال (8.71%) ولها معاملات الإحتجاز الآتية: 1237.04 و1290.74 و1021.11 و976.98 و1060 و1283.33 على التوالى.



(I)