

## Quantitative study of the volatile oil extracted from *Rosamarinus officinalis* L . growing in Karbala reigon as comparison with equivalent leaves imported from Jordan .

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### Abstract:

A field study was conducted at the research station of medicinal plants of pharmacognosy branch/pharmacy collage of Kerbala'a University to quantity evaluation of volatile oil from plants were planting at deferent spaces between plants and comparison with rosmarary leaves were imported from Jordan. The experiment consisted of four treatments included rosmarary plants were planted at 20, 40, 60 and 80 cm between plants and the trial was carried out by using randomized complete blook design (R.C.B.D.) with three replicates. The results were referred to volatile oil content was increased with increasing of spaces between plants. The results were referred that treatment at (80 cm) as space planting between plants was gave a highest quantity of volatile oil compare with other treatments .The percentage of volatile oil of all treatments was reached to 1.90% , 2.20% , 2.30% , 2.80% respectively .The percentage of volatile oil of leaves was imported from Jordan its reached to 2.1% of volatile oil.

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### الخلاصة:

تم تنفيذ تجربة إدخال حقلية لنبات إكليل الجبل *Rosamarinus officinalis* L. والذي يعود إلى العائلة الشفوية Labiates' في محطة تجارب النباتات الطبية التابعة لفرع العقاقير والنباتات الطبية / كلية الصيدلة / جامعة كربلاء لدراسة المحتوى الكلي للزيت الطيار في أوراق النباتات المزروعة في معاملات مختلفة من مسافات الزراعة والمقارنة مع محتوى الزيت الطيار في الأوراق الجافة لنبات إكليل الجبل والمستوردة من الأردن.

لقد وضعت النباتات المدخلة تحت معاملات من مسافات الزراعة بين النباتات (20، 40، 60، 80 سم) وفق تصميم القطاعات العشوائية الكاملة (R.C.B.D) وبثلاثة مكررات، وتم استخلاص الزيت الطيار للعينات المزروعة ومقارنتها مع محتوى الزيت الطيار للعينات المستوردة من الأردن في مختبر العقاقير والنباتات الطبية في كلية الصيدلة. أشارت نتائج الدراسة إلى زيادة النسبة المئوية للزيت الطيار في أوراق نباتات إكليل الجبل مع زيادة مسافات الزراعة وقد أعطت النباتات المزروعة على مسافة 80 سم بين النباتات أعلى نسبة من الزيت الطيار مقارنة مع بقية مسافات الزراعة وكذلك مقارنة مع النسبة المئوية للزيت الطيار في النماذج من الأوراق المستوردة لنبات إكليل الجبل وتراوحت النسبة المئوية للزيت الطيار 1.90%، 2.20%، 2.30%، 2.80% للمعاملات 20، 40، 60، 80 سم و2.10% لمعامله النموذج المستورد على التوالي كما تشير النتائج إلى استجابة نبات أكليل الجبل للظروف البيئية لمنطقة كربلاء مما يشجع التوسع في زراعته والاستفادة الطبية من الأوراق والزيت الطيار المستخلص في مجال الصناعة الدوائية وطب الأعشاب.

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## **Introduction :**

The rosmarin (*Rosmarinus officinalis L.*) it is consider as one of the most important medicinal plants belong to Labiate family . It is perennial plant , reach to about 1-2 meter in height with small and needle leaves . This plant is grown in houses , gardens in Jordan , Syria , and Plastain . The aqueous infusion of leaves for urinary tract infection (1) , cough , asthma and tonic for red bood celles it is used in anemia patients (2) . The aqueous infusion also used as gargle for mouth and tonsillitis (3) .

The leaves of this plant are contain about 2-3% of volatile oil that include many active compounds such as camphor , pinene and boraneol . The volatile oil it is used in medical ointments production especially for gout or rheumatism as museles pain relifer (4) .

Today Iraq it is consider a good consumer for both dry leaves and volatile oil of this plant and importe from other cuntries for food , spice and mrdical uses . The present work or this study was carried out to investigat the possibility of rosmarin cultivation under semi - arid enviroment at Karbala region .

## **Material and Methods :**

The induction experiment of rosmarin plant was carried out in medicinal plant garden of pharmacognosy department of pharmacy collage of Karrbala university during winter season ( 2009 – 2010 ) . All field practices were carried out such as irrigation , fertilization and weed removal , the leaves had been cutting to extraction the volatile oil after four months from cultivation and were dried at room temperature ( 20 – 30 c ) in labrotary to prevent any fermentation . The rosmarin plants were planted at different spaces ( 20, 40, 60, 80 ) cm between plants . The extraction of volatile oil from both fresh and dry leaves were imported from Jordan by distillation method (5) . Dried and powdered leaves from rosmarin (25g) were infused into 250 ml of distilled water to obtaine the

volatile oil by steam using clavenger equipment (6) .

All data provided were expressed as mean standard error of the mean ( SEM ) . Analysis of statistical significant was performed using the t – test and only values with  $p < 0.05$  were accepted as significant .

## **Result and Disscution :**

The results of volatile oil extraction were refered to adaptation of all rosmarin plants were cultivation in medicinal plant station to environmental condition at Karbala region . The adaptation of this plant may be belong to the rosmarin plant have small and needle leaves and covered by hairs with dark green colour (8) .

The morphological characteristic of this plant help to resistant the drought clamit and prevent the water loos from leaves surface during transpiration (9) . The form of leaves with strong roots of rosmarin plants increasing the adaptation and resistant for semi–arid condition such as Karbala region(10),(11).

The results at table (1) were refered to increasing the percentage of volatile oil by increasing the spaces planting between plants .The space at 80 cm was obtained a higher value of volatile oil percentage and reached to about 2.80 % . Other spaces ( 20,40,60) cm between plant were gave ( 1.90, 2.20, 2.30 )% respectively .

The increasing of volatile oil percentage of rosmarin leaves with increasing of spaces planting may be belong to decreasing competition effect of plants in a small area on nutrient element and other growth factors such as light and water etc (12) .The increasing of quality of volatile at 80 cm space between plants may be belong to increasing the rate of photosynthesis process and increasing the dry matter production that lead to increasing secondary metabolites , such as volitle oil production (13) .

Also the results were referred to the dry leaves were imported from Jordan gave less quantity of volatile oil compared with leaves from cultivation plants in this study , this results may be belong to many field practices such as method of cultivation spaces planting and cutting time with drying methods . Finally these results consider as good indicator to continue research of cultivation with chemical studies in Iraq .

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**Table(1) Effect of space planting on volatile oil percentage(%) of rosmary leaves**

Space planting				
80	60	40	20	
2.80	2.30	2.20	1.90	Percentage of volatile oil
1.126				LS.D. 0.05

**Figur(1)Relation ship between volatile oil quantity (%) and spaces planting (cm)**