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**EFFECT OF SOME CULTURAL PRACTICES
ON GROWTH AND CHEMICAL
COMPOSITION OF SOME MEDICINAL
PLANTS UNDER CONDITIONS OF
NORTHERN SINAI**

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CONTENTS

	Page
-INTRODUCTION -----	1
-REVIEW OF LITERATURE-----	3
-MATERIALS AND METHODS-----	29
-RESULTS AND DISCUSSION-----	37

PART I

Ammi visnaga L .

A-Effect of sowing date on:

1-Vegetative growth and seeds productivity.-----	37
2 -Chemical composition of the leaves.-----	40
3-The percentage of total chromones (khellin and visnagin in the fruits.-----	42

B-Effect of sow spacing and density on:-----

1-The growth and seeds productivity-----	45
2-Chemical composition of the leaves-----	51
3- The percentage of total chromones (khellin and visnagin) in the fruits.-----	55

C-Effect of NPK and bio-fertilization on:-----

1-The growth and seeds productivity.-----	57
2- Chemical composition of the leaves.-----	63
3-The percentage of total chromones (khellin and visnagin) of the fruits.-----	68

PART II

Foeniculum vulgare Mill.

A-Effect of sowing date on:

- 1-Vegetative growth and seeds productivity.-----70
- 2-Chemical composition of the leaves -----73
- 3-Volatile oil productivity of the fruits -----76

B-Effect of sow spacing and density on:

- 1-The vegetative growth parameters and seeds
productivity-----78
- 2-Chemical composition of the leaves.-----83
- 3-Volatile oil productivity of the fruits.-----87

C-Effect of NPK and bio - fertilization on:

- 1-The vegetative growth and seeds productivity-----90
- 2-Chemical composition of the leaves.-----94
- 3- Volatile oil productivity of the fruits.-----99

-Identification of volatile oil using G.L.C.-----102

I-Effect of sowing date on the volatile oil constituents -----102

II-Effect of sow spacing and density on the volatile oil

constituents-----107

III-Effect of NPK and bio-fertilization on the volatile oil

constituents -----114

-Conclusion -----119

-Summary -----120

-References -----124

-Arabic Summary

ABSTRACT

This study was carried out at Environmental Affairs Farm El- Arish North Sinai Governorate during 1997/ 98 and 1998/ 99 for *Ammi visnaga* L. and *Foeniculum vulgare* Mill.

The obtained results can be summarized as follows:

I- *Ammi visnaga* L.

1. Sowing on 1st Nov., led to an increase in the height of plant, number of umbels per plant, seed yield per plant and per fed. as well as the percentage of total chromones (khellin and visnagin) in the fruits.
2. Decreasing sow spacing to 30 cm. using one plant per hill led to increase in the plant height and seed yield per fed., while sowing at 50 cm. using one plant per hill led to an increase in the number of umbels per hill, seed yield per hill, as well as, the percentage of total chromones (khellin and visnagin) in the fruits.
3. Inoculation with Azotobacter + Azospirillum in the presence of the full dose of NPK resulted the tallest plants, the highest number of umbels per plant, and raised the seed yield per fed. and the total chromones (khellin and visnagin) in the fruits.

II- *Foeniculum vulgare* Mill.

1. Sowing on 1st Nov., led to an increase in the height of plant, number of umbels per plant, seed yield per plant and per fed., oil yield per plant and per fed. and the main constituents of the oil i. e. anethole and fenchone in the fruits.
2. Decreasing planting spacing to 30 cm. using one plant per hill led to an increase in the plant height, seed and oil yield per fed. While at 50 cm. using also one plant per hill led to an increase in the number of umbels per hill, seed yield per hill, oil %, oil yield per hill and anethole % in the fruits.
3. Inoculation with Azotobacter + Azospirillum in the presence of full dose of NPK gave the tallest plants, more number of umbels per plant and increased the seed yield per fed., oil yield per plant and per fed. Also, increased anethole while decreased fenchone, limonene and estragole in the volatile oil of the fruits.

INTRODUCTION

The production of aromatic and medicinal plants has been extensively focused in the last few years, besides there is a return back to use herbs in pharmaceuticals and cosmetics. Great efforts are being made all over the world for the production of more and better aromatic and medicinal plants to satisfy the needs of the over increasing population of the world, especially, in the developing countries.

The Egyptian government therefore recommended the increase of the yield of the aromatic and medicinal plants. This could be achieved either by cultivation of more area or by increasing the total yield per unit area mainly through improving the cultural practices i. e. choice of suitable planting dates, suitable sowing density, planting space and nutrition which play important roles in the growth and yield of the plants besides introducing suitable plants and recent varieties of the cultivated plants. The cultivation of such plants may extend to the new reclaimed land to face the extending demands of both local market and exportation. Therefore, cultivation of medicinal and aromatic plants in Sinai is a main target. This region has many advantages, as many of these plants grow wildly there which means that the climatic conditions are probably favorable for their growth. In addition, the extension in this region is promising, as Nile water has arrived there lately .

Thus, this work aimed to improve the average yield of some plants i. e. khella (*Ammi visnaga* L) and fennel (*Foeniculum vulgare* Mill.) through planting in suitable date and using suitable planting space and density as well as nutrition by chemical and bio-fertilizers.

The utilization of bio-fertilizers is considered today as a promising alternative for mineral fertilizers to reduce amount of applied mineral fertilizers and supports an effective tool for desert development under less polluted environments.

Ammi visnaga L. is one of the important pharmaceutical plants of the Umbelliferea .The fruits contain two main chromones , (khellin and

INTRODUCTION

visnagin) which are used as diuretic , carminative , stimulant , vasodilator, and antispasmodic .

They relieve congestion of the prostate gland and are also used for urinary disorders. An infusion of seeds releases renal stones with urine. The drug consists of the dried ripe fruits of *Ammi visnaga* L. has long been used in Egypt.

Khellin which is now commercially available in tablets and injections, is a potent coronary vasodilator .It has been employed in the treatment of angina pectoris and bronchial asthma, but its use appears to be limited by undesirable side-reactions .Dry mature umbel rays are used as toothpicks [Wallis1962; Boulos 1983; Franchi, *et al.*,1987 ; El-Fiky, *et al.*,1989; Rauwald, *et al.*, 1994 and Andrew 1996].

Fennel (*Foeniculum vulgare* Mill) Family Umbelliferae or Apiaceae is a seed aromatic plants as fruits contain 1.5 to 8.6%(usually 2 to 6%) volatile oil and 9 to 28 % (usually 17 to 20 %) fixed oil .Its volatile oil has carminative and stimulant properties and spasmolytic effects on smooth muscles of experimental animals *in vitro* .

A terpene fraction of fennel oil has shown strong cytotoxic properties. Anethole is reported to be having allergenic, weakly insecticide and toxic properties. Estragole has been reported to cause tumors in animals.

Fennel and sweet fennel oil is used as carminative or flavoring agent in certain laxative preparations. The oil is used as fragrance components in cosmetics, including soaps, detergents, creams, lotions, and perfumes, with highest maximum use level of 0.4% for perfumes (Albert 1980). In addition it is used in non alcoholic and alcoholic (liquors) beverages, candy, baked goods, meat and meat products, condiments and relishes, gravies and processed vegetables, as well as frozen dairy desserts, gelatins and puddings (John, and Lust, 1974; Boulos, 1983; Andrew, 1996; and Lawless, 1997).