

Original Research Article

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Studying Efficiency Inhibition of Some Medicinal Plant Extracts against Some Fungal

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ABSTRACT

Keywords

Plant extracts (basil, mint, dill), fungal, *Penicillium* sp., *Aspergillus niger*, *Rhizopus* sp., *Fusarium* sp.

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The present study impression concentrations different from extract alcohol some of the medicinal plants mint (*Mentha spicata* L.) basil (*Ocimum basilicum* L.) Dill (*Anethum graveolens*) agent isolation the fungal and which included (*Penicillium* sp. *Rhizopus* sp. *Fusarium* sp. *Aspergillus niger*) where showed the results if extract Dill give higher inhibition against fungal comparative others the extracts and got inhibition complete at concentration 1000 mg/ml against fungal *Penicillium* sp. *Rhizopus* sp and *Aspergillus niger* rate 100% while fungal *Fusarium* sp. of rate 97.12% on follow extract peppermint at concentration 1000 mg/ml got rate inhibition 98.31%, 93.41% against fungal *Penicillium* sp. *Aspergillus niger* on respectively and got less rate inhibition against fungal for extract basil comparative others the extracts they got at concentration 1000 mg/ml rate inhibition 89.47 %, 85.78%, 80 %, 77.59% against fungal *Penicillium* sp. *Aspergillus niger*, *Rhizopus* sp, *Fusarium* sp. on respectively.

Introduction

Increase the attention in the years of least a plants and medicinal herbs to employ of sources main production of the medicinal drugs or uses medicinal plants have no doubt remained the major sources of traditional medicine worldwide Accordingly, attention of scientists and researchers have been attracted towards developing new antibiotics that will curtail the increasing drug resistance among microorganisms (Masih *et al.*, 2014) plants used for traditional medicine generally contain a number of compounds which may be a potential natural antimicrobial combination and which may serve as an

alternative, effective cheap and safe antimicrobial agents for treatment of common microbial infections (Schimmer *et al.*, 1994; Mathur and Goyal, 2011). Medicinal plants were used as excellent antimicrobial agents because it poses a variety of chemical constituent is nature recently much attention has directed towards extracts and biologically active compounds isolated from popular plant species. Traditional medicine is an important source of potentially useful are a source of great economic value all over the world. Nature has bestowed on us a very rich botanical wealth and large number of diverse

type of plants grow in different parts of the country. Plant products still remain the principal source of pharmaceutical agents used in traditional medicine (Prince and Prabakaran, 2011).

Spearmint (*Mentha spicata* L.) or peppermint with vernacular name of "nana felfeli", a plant from the Labiatae family, is traditionally used as an antiseptic, stimulant, carminative agent or it is further used as a flavoring agent in cosmetic and pharmaceutical industries throughout the world (Mahboubi and Kazempour, 2013).

According to its antiseptic activities, there are some investigations on its antimicrobial activities. mint oil showed good antimicrobial activity against *Aspergillus niger*, *Rhizopus solani* and *Alternaria alternate* (Carretto *et al.*, 2010). The mint plant is an aromatic perennial herb cultivated in most part of the world, have traditionally been used in folk medicine. Leaves of mint plant are frequently used in herbal tea and for culinary purpose to add flavour and aroma. The distinctive smell and flavor, a characteristic feature of *Mentha* spp. is due to the naturally occurring cyclic terpene alcohol called menthol (Pramila *et al.*, 2012).

Basil (*Ocimum basilicum* L.) of the family Lamiaceae. *Ocimum* (from Greek ozo for smell) is appropriate for the genus since its various species are known for their peculiar strong odours. *Basilicum* is the Latin translation of the Greek basilikon meaning king and due perhaps the same reason the herb is called "Herbe Royale" in French (Khair-ul-Bariyah *et al.*, 2012). Plants have long been part of Iraqi cultures as they were consumed regularly as part of the diet. These plants were eaten raw as salad, or used in cooking to flavor the dishes. Some of these plants have been used as folk remedies for the treatment of ailments such as diabetes, high blood pressure, arthritis and fever as

well as health tonic (Salim *et al.*, 2014). *O. Basilicum* has been extensively studied for its medicinal properties which include antibacterial, anti-inflammatory, antiproliferative/anticancer, antioxidant, antiviral and antifungal activities (Zaker *et al.*, 2014).

Dill (*Anethum graveolens*) is grown as an irrigated annual crop both in temperate and tropical regions. A large number of varieties are known in cultivation (Randhwa *et al.* 1995). It is characterized by hollow stems, blue-green leaves and yellow-flowering flat compound umbels, which produce a dried ripe fruit commonly called seed.

Flowers and seeds represent the commercial product (Carrubba *et al.*, 2002). Dill has also been used as anticancer; anti-diabetic; antioxidant; antisecretory; and antimycobacterial (Zheng *et al.*, 1992; Hosseinzadeh *et al.*, 2002; Al-Ismail *et al.*, 2004; Panda *et al.*, 2008).

Materials and Methods

Preparation of simple

Leaves plants were collected from local city markets in misan/Iraq (mint, basil, dill). The plant material was thoroughly washed with clean water to remove soil and other dirt and Mill the leaves in miller for powder and putting powder both plant in tins glassy of time the extraction.

Microorganisms uses in studying

Uses in this study isolations Microorganisms different from isolations fungals and use organisms testing Microorganisms detection activity inhibition of extraction plants and source this isolations *Penicillium* sp. *Fusarium* sp. *Rhizopus* sp. *Aspergillus niger* from department sciences biology/college sciences /university misan.

Preparation of Plant Extracts

The air-dried plant materials were separately extracted twice at room temperature with ethanol 95% (500 ml/100 g of plant material each run). The final ethanol extract of each plant part was filtered using filter paper (Whatman) and was evaporated under vacuum at 40°C using rotary vacuum evaporator resultant residues from the different plants parts and were stored at -20 °C for further analysis (Mahasneh, 2002).

Activation isolations the fungal include isolations *Penicillium* sp. *Fusarium* sp. *Rhizopus* sp. *Aspergillus niger* and that transfer (1ml) from isolation on medium PDA and incubator at temperature 25 of time 5 day (Bobbarala *et al.*, 2009).

Study efficiently the inhibition for extraction plants against fungal.

The plant extracts were added to PDA (at 45°C) to give a final concentration 300, 500, 700 and 1000mg/ml for each extract were poured in petri dishes (8cm in diameter). Ethanol was added to medium in control plates. Then, inoculum discs (5 mm in diameter) Ethanol was added to medium in control Tube. from 5 days growing cultures of fungal placed in the center of petri plates containing PDA and extracts.. The plates were incubated in 27°C (Mahboubi and Kazempour, 2013). The percentage of fungal growth inhibition was calculated as (Pandey *et al.*, 1982) formula:

Growth inhibition% = [(growth in control – growth in sample)/growth in control] × 100

6. Statistical Analysis: Data regarding two parameters (concentration and medicinal plants) were analyzed statistically using SAS program with completely randomized design (CRD). Inhibition of radial fungal growth was examined using analysis of variance

(ANOVA) and means were compared by the test of least germination of fungal.

Results and Discussion

Inhibition types some fungal of uses extracts of the medicinal plants

Inhibition of fungal of the extract peppermint

Shown in Table(1)) and Fig.(1)the influences Inhibition of the extract peppermint against fungal *Penicillium* sp, *Fusarium* sp, *Rhizopus* sp, *Aspergillus niger* of concentration (300,500,700,1000 mg/ml) and showed extract peppermint Capability high on Inhibition both *Penicillium* sp,*Aspergillus niger* at concentration(1000 mg/ml) of rate Inhibition reach %98 and %93 on respectively. And influences Inhibition of the extract peppermint against *Penicillium* sp, *Aspergillus niger* at concentration (300, 500, 700 mg/ml) of rate Inhibition reach 21.56, 17.10%, 60.89%, 54.29,% 89.46%, 86.71%on respectively, and reach less Inhibition against *Fusarium* sp, *Rhizopus* sp at concentration (300 mg/ml) of rate %11.78, %15.44 on respectively were found significant (p<0.05)between concentration for extract mint.

If mint plant have characteristic feature of antimicrobial properties because contain compounds activity cyclic terpene alcohol called menthol (Pramila *et al.*, 2012). From these results, it was observed that for extract mint his Capability Inhibition against *Penicillium* sp do much from lasting fungal. *M. piperita* extract exhibits antimicrobial activity against a range of fungi including *Alternaria alternata*, *Aspergillus niger*, *Penicillium funiculosum*, *Trichophyton rubrum*. this result approximate when of reach (Jakowinko *et al.*, 2010) at studying about mint against both *Aspergillus niger*, *Botrytis cinerea*, *Eurotium amstelodami*,

Eurotium chevalieri, *Penicillium cyclopiumi* *Trichothecium roseum* observed that for influences obvious the mint on growth fungal. And significant reason that to capability the extracts plant on Inhibition fungi The use of biological compounds extracted from plants may be an alternative to conventionally used fungicides to control phytopathogenic fungi, due to their being bioactive chemicals such as flavonoids, phenols, tannins, alkaloids, quinones, saponins and sterols (Manoorkarand Gach, 2014).

Inhibition of fungal of the extract basil

Shown in Table(2) and Fig.(2) the influences Inhibition of the extract basil against fungal *Penicillium sp*, *Fusarium sp*, *Rhizopus sp*,

Aspergillus niger of concentration (300,500,700,1000 mg/ml) and showed extract basil Capability high on Inhibition both, *Penicillium sp*, *Aspergillus niger* at concentration(1000 mg/ml) of rate Inhibition reach 89.47% and 85.78% on respectively. And influences Inhibition of the extract basil against *Penicillium sp*, *Aspergillus niger* at concentration(300,500,700 mg/ml) of rate Inhibition reach 18.67,% 14.52%, 58.99%, 48.76,% 78.23%,74.50% on respectively, and reach less Inhibition against *Fusarium sp*, *Rhizopus sp* at concentration(300 mg/ml) of rate 14.58% , 12.34% on respectively. from these results, it was observed that for extract basil his Capability Inhibition against *Penicillium sp* do much from lasting fungal. were found significant (p<0.05) between concentration for extract basil.

Table.1 Influence addition concentration different from extract mint on growth some fungal

<i>Penicillium sp.</i>	<i>Fusarium Sp.</i>	<i>Rhizopus Sp.</i>	<i>Aspergillus niger</i>	Name funal concentration
21.56	11.78	15.44	17.10	mg/ml 300
60.89	48.60	50.21	54.29	mg/ml 500
89.46	76.55	81.39	86.71	700 mg/ml
98.31	83.17	90.45	93.41	1000 mg/ml

Table.2 influences addition concentration different from extract basil on growth some fungal

<i>Penicillium sp.</i>	<i>Fusarium Sp.</i>	<i>Rhizopus Sp.</i>	<i>Aspergillus niger</i>	Name funal concentration
18.67	8.77	12.34	14.52	mg/ml 300
58.99	44.82	45.51	48.76	mg/ml 500
78.23	68.45	71.64	74.50	700 mg/ml
89.47	77.59	80.56	85.78	1000 mg/ml

Table.3 influences addition concentration different from extract Dill on growth some fungal

<i>Penicillium</i> sp.	<i>Fusarium</i> Sp.	<i>Rhizopus</i> Sp.	<i>Aspergillus niger</i>	Name funal concentration
24.51	15.38	18.54	20.78	mg/ml 300
75.36	59.78	63.56	65.86	mg/ml 500
95.34	86.19	90.32	92.13	700 mg/ml
100	97.12	100	100	1000 mg/ml

Fig 1 Influences addition concentration different from extract mint on growth some fungal.

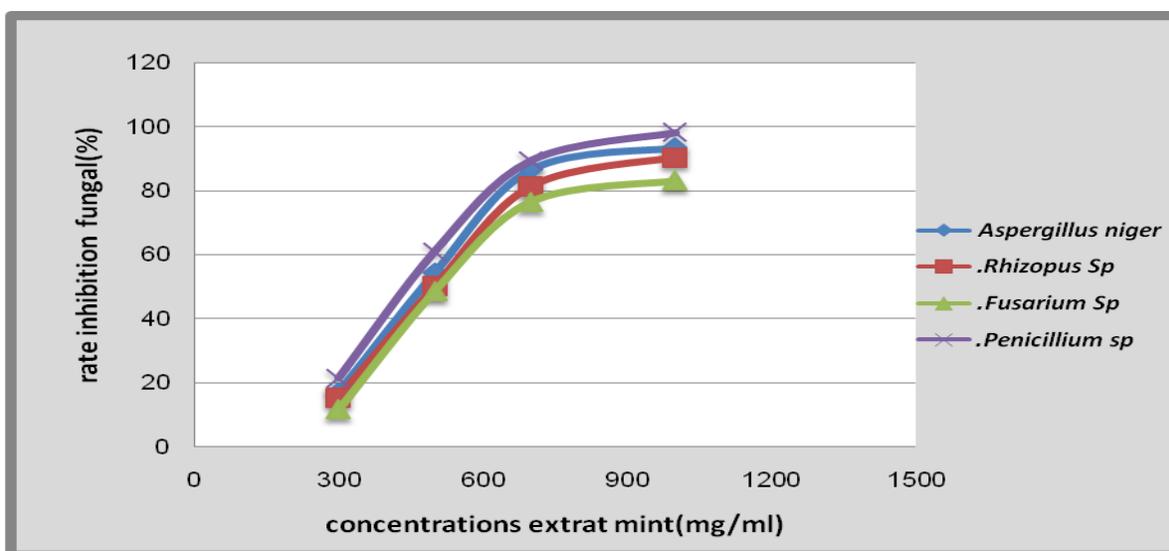


Fig 2 Influences addition concentration different from extract basil on growth some fungal

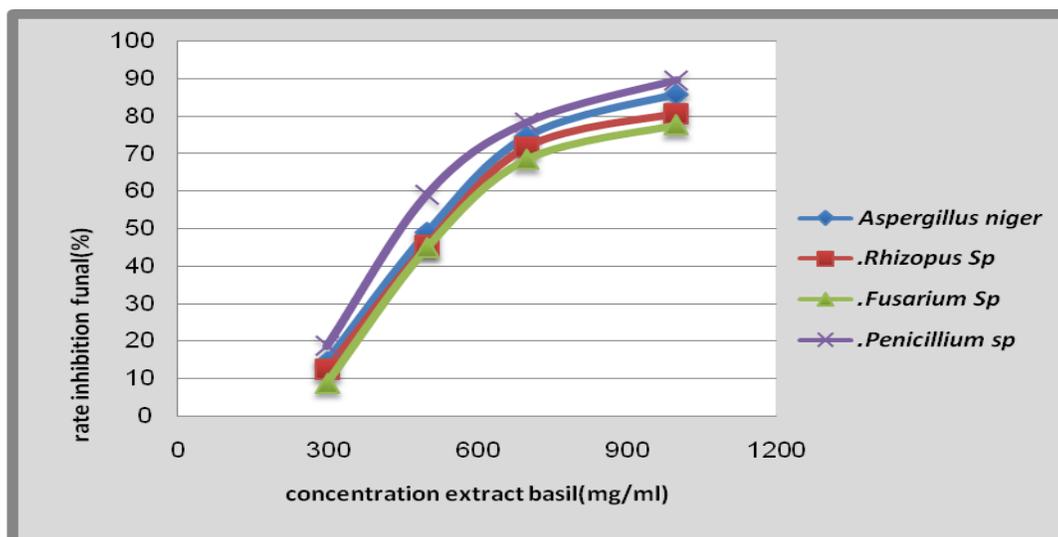
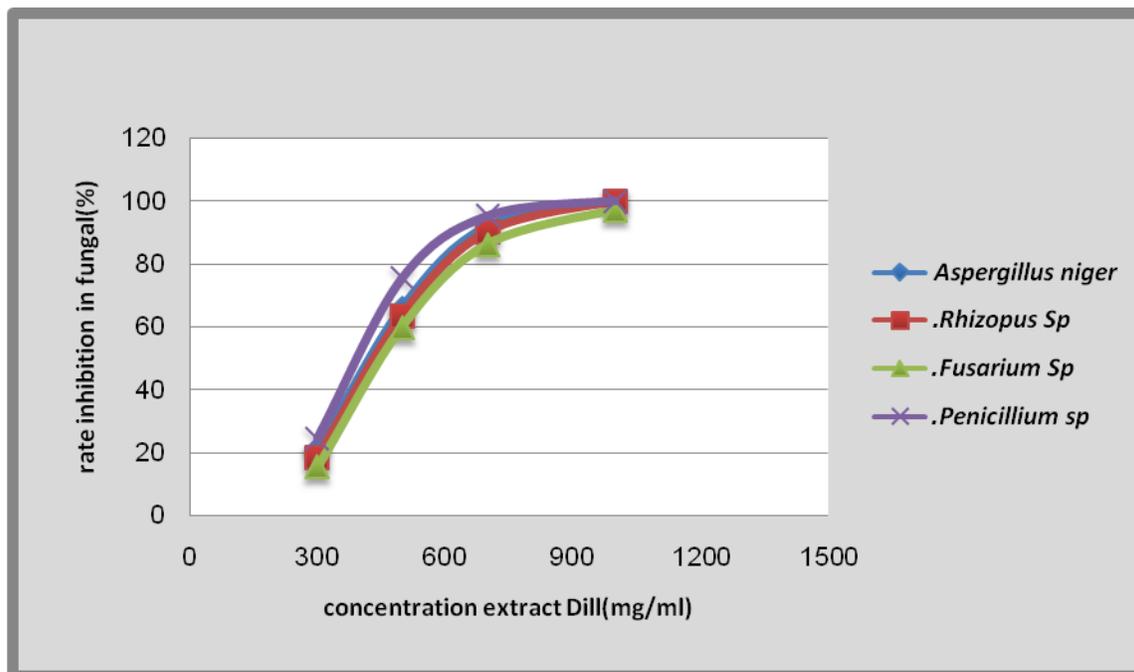


Fig 3 Influences addition concentration different from extract Dill on growth some fungal



Obvious both (Edeoga *et al.*, 2006; Okwu and Iroabuchi, 2009) if leaves basil contain These products are known by their activity substances such as phenolics, alkaloids, and terpenoids These plants then emerged as compounds with potentially significant application against including bacteria, fungi. Medicinal plants represent a rich source of antimicrobial agents and use

The plant extracts were assayed for antifungal activity against the fungal strain *A. niger* (Bobbarala *et al.*, 2009). This result agreement with (Bidarigh *et al.*, 2012). When uses Preparation of basil Extract different of Solvent Extracts alcohols against fungi.

It has been proved that ethanol extract of *N. oleander* and *O.basilicum* exhibited the highest activity microbial phytopathogens. This may be attributed to two reasons; firstly, the nature and potentiality of biological active components (alkaloids, flavonoids, phenols, Terpenoids etc).

Inhibition of fungal of the extract Dill

Shown in Table (3) and Fig. (3) the influences Inhibition of the extract Dill against fungal *Penicillium sp*, *Fusarium sp*, *Rhizopus sp*, *Aspergillus niger* of concentration (300,500,700,1000 mg/ml) and showed extract basil Capability high on Inhibition both, *Penicillium sp*, *Aspergillus niger* at concentration(1000 mg/ml) of rate Inhibition reach 100% and 100% on respectively. And influences Inhibition of the extract Dill against *Penicillium sp*, *Aspergillus niger* at concentration (300,500,700 mg/ml) of rate Inhibition reach 24.51,% 20.78%, 75.36%, 65.86,% 95.34 % ,92.13% on respectively, and reach less Inhibition against *Fusarium sp*, *Rhizopus sp* at concentration(300 mg/ml) of rate 15.38% , 18.54% on respectively. From these results, it was observed that for extract Dill his Capability Inhibition against *Penicillium sp* do much from lasting fungal were found significant ($p < 0.05$) between concentration for extract dill.

Dill has also been used as anticancer; anti-diabetic; antioxidant antiseptics; and antimycobacterial and leaves dill contain Chemical structure of major chemical constituents of on types compounds activity (pinene, Limonene, cymene) and dill have property Inhibition against than it Fungus *Aspergillus flavus* causes direct infections and systematic diseases in humans and lesion in plasma membrane detected through flow cytometry and further verified through the inhibition of ergosterol synthesis And significant reason that dill causes reduction in morphological changes in the cells of aspergillus flavus, as well as a the ergosterol quantity the found compound activity which include (pinene, Limonene, cymene) (Gautam *et al.*, 2013). Some studies reports the traditional use of dill *Anethum graveolens* green leaves as vegetable, and food flavoring agent and as carminative, stomachic and diuretic (Jana and Shekhawat, 2010; Jinesh *et al.*, 2010).

In conclusion, this paper shows the possible use of extracts plant medicinal in inhibition fungal cause diseases in plant and human with different of concentrations in the range evaluated (300 to 1000 mg/ml) were critical in some of the fungal studied against fungal *Penicillium sp*, *Fusarium sp*, *Rhizopus sp*, *Aspergillus niger* especially in dill extract show rate inhibition against fungal rate high.

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