Plant Archives Volume 20 No. 1, 2020 pp. 2785-2792 **e-ISSN:2581-6063 (online), ISSN:0972-5210**

EFFICACY OF GIBBERELLIC ACID AND INDOLE ACETIC ACID FROM FUNGI GROWTH ACCOMPANYING MEDICINAL PLANTS

Zahra Majed Jasem and Ban Mousa Hassan*

Department of Biology, College of Education for pure sciences, Karbala University, Iraq.

Abstract

The study was conducted in the postgraduate laboratory department of biology, college of education for pure sciences, Karbala University, The study aimed to find the effect of plant growth regulators Gibberellic acid (GA3), Indole acetic acid (IAA) with concentration (2.5,5,10,15,20) ppm on the growth of fungi accompanying medicinal plants and producing toxin. As it isolated four fungi producing toxins from three medicinal plants are *Thymus vulgaris*, *Chamaemelum nobile*, and *Pimpinella anisum*, the study showed decreased significantly in (0. 05 <p) that growth regulators (5,10,15) ppm and the concentration 20ppm record the highest percentage of significant decrease in the growth of all the mentioned fungi while the concentration 2.5ppm resulted in an increase in the some sample.

Key words : Antifungal, Medicinal plants, Gibberellic acid (GA3), Indole acetic acid (IAA).

Introduction

Medicinal plants are considered to be unconventional crops, Humans have used them throughout the ages for various purposes, In the middle and modern ages, their importance appeared in treating many human diseases, such as antioxidant and anticancer, in addition to their entry into many industries as preservatives, flavorings, and delicious appetizers. (Adebayo *et al.*, 2010). These herbs are exposed to a series of pollutants starting from the cultivation stage until conservation and extraction (De Smet, 1992). Contrary to the prevailing belief in the safety of these herbs as many health risks arise as a result of continuous consumption of medicinal herbs (De Smeth, 1995). Where you see these medicinal plants have many pathogenic fungi, whether in the field or in storage, which are related to the health of the consumer, which is caused by serious diseases (Abdul Karim *et al.*, 2011). Several data are used to inhibit the growth of these fungi, including plant growth regulators, which are defined as effective organic compounds that build Naturally in the plant or it can be manufactured commercially, and it causes a change in the plant growth and development as well as its use within certain concentrations at different stages of plant growth, which are either to be inhibitors or stimuli for growth (Poridaen, 2009). Oxins are among the commonly used growth regulators and are defined as compounds Membership is used with very few concentrations within the plant and have an influential role in the biological processes (George *et al.*, 2008). Followed by gibberellins that have a significant effect on plants during various stages of growth, affecting many phenomena and physiological processes, including plant cell division, control of the aging stage of leaves and fruits, and stimulation of flowering of plants (Saleh, 2009). Contamination of medicinal plants with fungal toxins can contribute to Serious human health problems. Numerous natural accidents of fungal toxins have been reported in plants Medicines and herbal medicines in different countries including Spain, China, Germany, India, Turkey and most of the middle countries (Heperkan, 2006). Therefore, this study aimed to highlight the effect of plant growth regulators (AG3, IAA) on inhibiting some Iraqi poisonous fungi for local medicinal herbs.

***Author for correspondence :** E-mail: husainsaed@gmail.com

Materials and Methods

Collection Sample

10 samples of medicinal herbs were represented by

Thymus vulgaris, *Chamaemelum nobile*, and *Pimpinella anisum* for five separate stores from the local markets of Karbala Governorate during October. Second 2018 at an average of 10 gm for each sample, then these samples were placed in nylon bags containing containers on which the date of taking the sample, its number and the location of the sample were recorded.

Agricultural media

1. Potato Dextrose Agar (PDA) Prepare the medium according to the instructions of the prepared company.
2. Czapeks Agar (CzA) Prepare the medium according to the instructions of the supplied company.
3. Coconut Agar (CA) by taking 100 grams of grated coconut, which is commercially available in the market, then add 300 ml of distilled water and heat the mixture for 20 minutes, then filter the mixture with a clean cloth (gauze) and add to the filter 2% agar and complete the volume to 300 ml of distilled water. (Lin and Dianese, 1976)

All media sterilized in the autoclave at 15 Psi /121°C for 15 minutes and add 250 mg/ liter Amoxicillin antibiotic to prevent the growth of bacteria.

Fungi isolation

Used the direct plate method to isolate the fungi accompanying medicinal herb specimens with a weight of (10) gm from each plant sample, after which they were sterilized superficially with 10% sodium hypochlorite for a period of (5) minutes, then washed with distilled water three times and dried on filter paper, and then transferred to Petri dishes on the culture medium PDA by five grains for each of plant *Thymus vulgaris*, *Chamaemelum nobile* and *Pimpinella anisum* separately and by three replicates for each plant sample and incubated the dishes at a temperature of 25 C for a week. (Evans *et al.*, 2000).

The fungi were purified on media (PDA) and Czapic agar (CzA) for the purpose of Phenotypic diagnosis using certified classification keys (Parmeter and Moni, 1970; Whiten *et al.*, 2016).

The percentage of the appearance

The percentage of the appearance of fungal species in the studied samples was calculated using the following formula (Booth *et al.*, 1988).

The percentage of appearance = Number of samples in which the gender or type showed/ the total samples x 100.

The percentage of frequency

Was calculated the percentage of the frequency of each type of fungal species isolated for samples taken from study sites using the following equation (Rajasinghe *et al*, 2009).

Percentage of frequency = isolates of one species / Total number of isolates of all fungi x 100.

The ability to test fungal isolates to produce toxin

Tested susceptibility isolation of fungi Isolated From *Thymus vulgaris*, *Chamaemelum nobile* and *Pimpinella anisum* using the coconut medium pollinate the coconut medium with a 5 mm disk of pure fungal isolates growing on the PDA medium and one week old using a cork borer and at three replications per isolate after which incubated the dishes at a temperature of 25 ° C for a week Then, the ability to grow the isolates of fungi accompanying medicinal herbs was performed through the use of an ammonia solution with a concentration of 10%. The filter papers moistened with ammonia droplets were placed in the lid of the dish containing the fungus on the media of coconut agar (CA), then the dishes incubator upside down For 4 days at a temperature of 25 + 2 ° C, then the dishes were taken out and for the colors of the colonial bases, a change in the color of the colony bases from transparent color to red or orange indicates that the growing isolation is capable of producing poison and red color indicates the efficiency of isolation by producing Poisons (Lin and Dianese, 1976).

Test the effect of regulators of growth Gibberellic acid and Indol acetic acid on the growth of fungi

Various concentrations of gibberellin were prepared by dissolving 2.5mg of dry matter and dissolving them with 10ml of distilled water. Then, complete the volume for (1000ml) of distilled water giving concentration 2.5ppm, In the same way prepared the concentrations (5ppm,10ppm,15ppm, 20ppm) of gibberellin (Emongor, 2007). Then prepared indole acetic acid concentrations, with steak the taking 2.5mg and dissolve it with (10ml) of absolute alcohol (Methanol) its concentration (95%) then complete the volume to (1L) of distilled water to give the concentration (2.5ppm) in the same way prepared the concentrations (5ppm, 10ppm, 15ppm, 20ppm) from the indole acetic acid (Mukhtar, 2004) dissolve the concentration in distilled water or absolute alcohol in a Czapk medium and add three replicates to each concentration. Dishes with isolated and growing fungi on the PDA medium for eight days with a 5 mm disk using a cork borer and then incubated the dishes at 28 C.

Results and Discussion

Fungi accompanying local medicinal plants

The results of isolation and diagnosis of accompanying

fungi showed that *Chamaemelum nobile* was accompanied by several fungi that included 8 species belonging to 6 genera. These genera are *Aspergillius, Penicillium, Alternarid, Pythium, Cladosporium and Chaetomium*. The gender of *Aspergillius niger* came first, with a 100% appearance, followed by the genus *Penicillium* in second place, and the most important species isolated from it were *Penicillium sp*, with an appearance of 80%, and *Penicillium raistriskii* with an appearance of 20%, followed by the genus of *Alternaria sp*, with a 60% appearance, and the genus appeared *Cladosporium* has two types: *Cladosporium herbarum* with 40% and *Cladosporium oxysporum* with an appearance of 13.33%, also the genus *Chaetomium atrobrunneum* and *Pythium* with appearance 66% for each. while the results of the *Thymus vulgaris* plant included accompaniment of 8 species of fungi from 5 genus and these species were *Penicilium, Aspergillius, Alternaria, Pacilomyces* and *Cladosporium*. The species of genus *Penicillium* was ranked first and was the most important isolated species of it *Penicillium chrysogenum* with a percentage of 100% appearance followed *Penicillium notatum* with 60.66% impression ratio. while *Penicillium citrinum* has a 33.33% appearance. followed by the genus *Aspergillius* which ranked second. One of its most important types was *Aspergillius niger*, with a 100% appearance. As for the genus *Alternaria*, it ranked third with *Alternaria alternata* 86.67% appearance and *Alternaria* sp. with 46% emergence and *Paecilomyces and Cladosporium* genera were less polluted by 13.33% and 6.66% respectively. The results of isolation and diagnosis of fungi accompanying *Pimpinella anisum* plant showed the emergence of many fungi, including 8 species belonging to 5 genera, and these species *Penicillium, Aspergilius, Alternaria, Pythium and Fusarium* topped the species of *Penicillium* ranked first and was one of the most important species isolated from it *Penicillium* sp. reached 100% *Penicillium chrysogenum* with 60% impression, and *Penicillium itatcum* 33%.33%, followed by the genus *Aspergillius niger* with an appearance rate of 100%, while the genus *Alternaria* ranked third and the most important species isolated from it, *Alternaria alternata* if its appearance percentage reached 66. 67%, *Alternaria chlamydospora* at 13. 33% of the species, *Pythium sp* and *Fusarium sp*, where the percentage of the occurrence of the fungi reached 20% and 13.33%, respectively (Table 1).

Table 1: Percentage of occurrence and frequency of fungi isolated from chamomile, thyme and anise leaves.

Herbs	Fungal species	Appearance%	Hesitation%
Chamaemelum nobile	*Penicillium sp.*	80	14.78
	Penicillium raistriskii	20	1.10
	Aspergillius niger	100	52.71
	Alternaria sp	60	22.17
	Pythium sp	6.66	0.50
	Cladosporium oxysporum	13.33	1.10
	Cladosporium herbarum	40	5.41
	Chaetomium atrobrunneum	6.66	0.50
Thymus vulgaris	*Penicillium chrysogenum*	100	28.27
	Penicillium notatum	60.66	4.16
	Penicillium citrinum	33.33	2.31
	Aspergillius niger	100	45.37
	Alternaria sp	46	4.63
	Alternaria alternata	86.67	10.64
	Pacilomyces sp	13.33	0.93
	Cladosporium sp	6.66	0.46
Pimpinella anisum	*Penicillium sp*	100	25.91
	Penicillium chrysogenum	60	10.97
	Penicillium itatcum	33.33	2.65
	Aspergillius niger	100	34.89
	Alternaria alternata	66.67	7.64
	Alternaria chlamydospora	13.33	1.67
	Pythium sp	20	1.32
	Fusarium sp	13.33	1.67

The results of this study are similar with study of U.S (2002), and (Afnan *et al.*, 2011), (Abdullah Samir and Mahdi, 2011), as previous studies (Safety, 1999) pointed out to accompany many fungi with *Thymus vulgaris, Chamaemelum nobile* and other medicinal plants. Some researchers have found contamination by some fungal toxins produced by these(Fraser, 2009) due to the fact that many species of fungi accompany medicinal plants several variables, including poor storage and shipping, as well as damage from harvesting operations, insect infections and cultivation practices, and the failure of these herbs to comply with public health conditions

(Desmet, 1992). Storage is one of the most important rules that must be strictly observed in the foundations of herbal science to avoid plant corruption and reduce the loss of the active substance exposed plants to these fungi (Albaz, 2008).

Test of the susceptibility of some fungal isolates to poison production on coconut media

The results of this test using coconut media and ammonia showed the ability of 4 genera of fungi accompanying medicinal plans, which were represented by *Penicillium chrysogenum, Alternaria altrnata, Chaetomium atrobrunneum, Cladosporium herbarum,* isolated from *Thymus vulgaris*, *Chamaemelum nobile*, and *Pimpinella anisum* to produce toxins by changing the color of the base on the coconuts media that are inoculated with fungal isolates, as red or orange color appeared in the colony base of the fungus producing the toxin, while 15 isolates gave a negative result for testing. The isolates differed in the amount of toxin production, depending on the intensity of the color change of the base plate, the results of this study are consistent with (Ali, 2017), (Al Wadi *et al*., 2011) and (Saito and Machida, 1999) when performing the same test, as explained this Studies indicate that the colony's base color changes to from white to red or orange, indicating the production of fungus for poison. The degree of red color is attributed to the quantities produced from poison. The isolation of red or dark orange color indicates its ability to produce larger quantities of isolates whose bases are colonies light red, pink or orange. Most fungi are aerobic (using oxygen) and because of their small size they consume organic matter wherever moisture and temperature are sufficient when conditions are appropriate for their growth and reproduction. Since fungal toxins weaken the recipient host, the fungus uses it as a strategy to improve the environment for more spread of fungi, depends The production of mycotoxins on the internal and external evidence surrounding them, which varies greatly in the severity of their toxicity depending on the affected organism, its sensitivity, metabolism and defense mechanisms (Carlson *et al*,. 2002).

Effect of regulators of growth Gibberellic acid and Indol acetic acid on the growth of fungi accompanying plants medical

Affected organizations growth gibberellic acid and indole acetic acid clearly in the growth of fungi *Penicillium chrysogenum, Alternaria altrnata, Chaetomium atrobrunneum and Cladosporium herbarum* showed the results table 2 *Chaetomium atrobrunneum* that GA3 and IAA may decreased significantly (0. 05 < p) in diameter Colonial and all the concentrations of used as compared with control, However, the concentration (20ppm) from AG3may register the top of the low moral

Table 2: The effect of growth regulators GA3 and IAA on the growth of fungi *Chaetomium atrobrunneum*.

Concentration	Material	GA3					IAA					p.value
		Two days	Four days	Six days	Eight days	Total	Two days	Four days	Six days	Eight days	Total	
Control	Mean	27.50	47.79	69.60	89.83	58.68	27.50	47.79	69.60	89.83	58.68	
	S.D	0.10	0.19	1.40	0.40	24.39	0.10	0.19	1.40	0.40	24.39	
	LSD	1.18					1.18					
2.5 ppm	Mean	26.93	46.23	68.20	87.90	57.32	27.30	47.07	67.47	86.53	57.09	0.98
	S.D	0.51	0.40	0.30	0.46	23.93	0.56	1.02	1.07	0.75	23.15	
	LSD	0.68					1.40					
5 ppm	Mean	25.00	43.17	63.60	83.27	53.76	17.23	32.63	51.63	71.43	43.23	0.26
	S.D	0.44	0.35	0.98	2.21	22.83	0.67	0.25	0.80	1.10	21.25	
	LSD	1.99					1.23					
10 ppm	Mean	21.23	39.87	57.83	76.20	48.78	11.80	27.33	46.73	66.93	38.20	0.24
	S.D	0.81	0.85	0.68	0.66	21.36	0.79	1.02	0.59	0.32	21.63	
	LSD	1.21					1.17					
15 ppm	Mean	17.40	34.67	53.20	71.53	44.20	0.00	0.00	0.00	0.00	0.00	0.00
	S.D	1.23	0.21	0.36	1.10	21.14	0.00	0.00	0.00	0.00	0.00	
	LSD	1.36										
20 ppm	Mean	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
	S.D	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	LSD					0.62					0.51	

Table 3: The effect of growth regulators GA3 and IAA on the growth of fungi *Penicillium chrysogenum*.

Concentration	Material	GA3					IAA					p.value
		Two days	Four days	Six days	Eight days	Total	Two days	Four days	Six days	Eight days	Total	
Control	Mean	15.47	30.50	51.81	75.60	43.34	15.47	30.50	51.81	75.60	43.34	
	S.D	0.15	0.10	0.19	0.15	23.67	0.15	0.10	0.19	0.15	23.67	
	LSD	0.24					0.24					
2.5 ppm	Mean	17.37	32.60	53.50	77.67	45.28	17.57	31.50	52.77	74.63	44.12	0.90
	S.D	1.07	1.11	0.95	0.72	23.70	1.22	1.01	1.84	1.15	22.61	
	LSD	1.56					2.15					
5 ppm	Mean	13.47	27.97	45.97	66.53	38.48	14.20	27.90	45.50	63.87	37.87	0.94
	S.D	0.25	0.83	0.67	1.21	20.76	0.66	1.14	0.70	1.45	19.52	
	LSD	1.30					1.66					
10 ppm	Mean	10.93	26.30	42.53	61.63	35.35	10.17	25.00	38.93	55.17	32.32	0.69
	S.D	0.67	0.44	0.65	0.85	19.69	0.65	0.75	0.49	0.65	17.41	
	LSD	1.07					1.03					
15 ppm	Mean	9.27	23.30	39.17	56.73	32.12	0.00	0.00	0.00	0.00	0.00	0.00
	S.D	0.32	0.44	0.81	0.49	18.51	0.00	0.00	0.00	0.00	0.00	
	LSD	0.88										
20 ppm	Mean	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
	S.D	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	LSD					0.50					0.60	

Table 4: The effect of growth regulators GA3 and IAA on the growth of fungi *Cladosporium herbarum*.

Concentration	Material	GA3					IAA					p.value
		Two days	Four days	Six days	Eight days	Total	Two days	Four days	Six days	Eight days	Total	
Control	Mean	26.60	50.23	78.80	90.10	61.43	26.60	50.23	78.80	90.10	61.43	
	S.D	0.60	1.15	0.75	0.50	25.92	0.60	1.15	0.75	0.50	25.92	
	LSD	1.27					1.27					
2.5 ppm	Mean	26.10	49.23	76.77	88.57	60.17	26.10	49.37	76.53	89.00	60.25	0.99
	S.D	0.30	0.83	0.91	1.25	25.39	0.44	0.85	1.27	0.85	25.47	
	LSD	1.42					1.44					
5 ppm	Mean	24.13	45.13	68.90	84.33	55.63	21.07	41.30	64.53	81.87	52.19	0.73
	S.D	0.70	0.57	1.71	1.06	23.96	0.81	1.21	1.03	1.26	24.07	
	LSD	1.76					1.75					
10 ppm	Mean	20.77	40.43	58.80	75.73	48.93	17.53	36.97	56.40	72.03	45.73	0.72
	S.D	0.67	1.07	0.40	0.85	21.42	0.70	1.19	0.92	0.68	21.40	
	LSD	1.26					1.44					
15 ppm	Mean	18.47	33.97	51.33	68.03	42.95	12.73	31.77	51.67	65.67	40.46	0.77
	S.D	0.65	0.64	0.85	0.68	19.41	0.90	1.53	1.10	0.57	20.94	
	LSD	1.14					1.73					
20 ppm	Mean	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	S.D	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	LSD					0.63					0.70	

where inhibit the growth of Colonial fungal, the concentration (15ppm) IAA register the top of the low moral growth fungi. Indicated the results shown in table 3 the fungus *Penicillium chrysogenum* the regulars growth GA3 and IAA decreased significantly in dimeter Colonial with concentration (5ppm, 10ppm, 15ppm, 20ppm) compared with a control, However, the concentration (20ppm) of GA3 may register the top of the low moral

Table 5: The effect of growth regulators GA3 and IAA on the growth of fungi *Alternaria alternata*.

Concentration	Material	GA3					IAA					p.value
		Two days	Four days	Six days	Eight days	Total	Two days	Four days	Six days	Eight days	Total	
Control	Mean	28.50	57.23	86.43	90.13	65.58	28.50	57.23	86.43	90.13	65.58	
	S.D	0.50	0.15	0.45	0.55	26.02	0.50	0.15	0.45	0.55	26.02	
	LSD	0.71					0.71					
2.5 ppm	Mean	29.43	59.63	88.83	90.13	67.01	29.20	57.17	86.00	89.70	65.52	0.88
	S.D	0.97	0.80	0.59	0.06	26.00	0.44	0.71	0.62	0.44	25.55	
	LSD	1.11					0.90					
5 ppm	Mean	26.17	50.73	75.50	87.50	59.98	20.93	44.37	65.97	80.53	52.95	0.48
	S.D	0.45	0.50	1.11	0.53	24.65	0.81	0.51	0.57	0.31	23.53	
	LSD	1.12					0.92					
10 ppm	Mean	22.83	47.17	68.23	82.70	55.23	15.83	36.63	58.50	72.67	45.91	0.33
	S.D	0.76	0.49	0.74	0.44	23.58	0.35	0.85	2.03	1.06	22.58	
	LSD	1.00					1.97					
15 ppm	Mean	18.90	39.77	60.67	75.17	48.63	10.97	31.33	51.20	65.90	39.85	0.34
	S.D	0.66	0.38	0.15	0.65	22.23	0.76	1.16	1.04	0.46	21.64	
	LSD	0.81					1.44					
20 ppm	Mean	13.97	30.23	48.33	65.47	39.50	0.00	0.00	0.00	0.00	0.00	0.00
	S.D	0.31	1.60	1.11	0.31	20.18	0.00	0.00	0.00	0.00	0.00	
	LSD	1.59										
	LSD				0.55						0.58	

where inhibit the growth of Colonial fungal, the concentration (15ppm) IAA register the top of the low moral growth fungi, the concentration (2.5PPM) caused a significant increase in the colony diameter of (45.28mm) compared to the control group average of (43.34mm). The results shown in table 4 *Cladosporium herbarum* showed the effect of GA3 and IAA growth regulators on the decrease the moral significance of the growth of the fungal colony in concentrations (20PPM, 15PPM, 1OPPM, 5PPM) compared to the control group, except that the concentration (20ppm) for the GA3 and IAA regulators recorded the highest significant decrease and dampened the growth of the fungal colony, while the concentration (2.5ppm) for the GA3 and IAA regulators No significant difference was found in the growth of the fungal colony diameter. The results shown in table 5 showed the fungus and *Alternaria altrnata* the role of the GA3 and IAA growth regulators. In the significant decrease in the growth of the fungal colony in concentrations (20PPM, 15PPM, 10PPM, 5PPM) compared to the control group, however, the concentration (20ppm) of the GA3 and IAA regulators recorded the highest significant decrease and slowed down the growth of the fungal colony, while the concentration (2.5ppm) of the regulator GA3 has caused a significant increase in the colony diameter average of (67.1mm) compared to the average diameter of the control group of (65.58mm), while the concentration (IAA) (2. 5ppm) of the regulator did not make a significant difference in the growth of the diameter of the fungal colony. The reason for the significant decrease in growth is the positive role of GA3 in inhibiting the growth of fungi and slowing their growth, which will be reflected in the result on the colony's diameter and area, as well as the significant decrease caused by the IAA in the colony's diameter and area due to its importance in inhibiting and impeding the growth of the fungus (Fernandez - Falcon *et al.,* 2003) and the increased growth of the fungal colony obtained as a result of adding a concentration (2.5ppm) of GA3 and IAA is the result of increased cell division and stimulation of DNA and RNA formation and protein components in the mono- and bi-phase of fungal reductive division (Markarem and Alldridge, 1969). These results are consistent with the findings of (Al-Thaimy and Abdel-Nour, 2014), (Metwally *et al.,* 2006) And (Tanaka *et al*., 2006) that the use of GA3 and IAA growth regulators was effective and with a positive and significant role in inhibiting fungi accompanying a plant *Cowpea*, as the reason for the significant decrease in the colony of the fungus colony is that Gibberellic acid limits the growth of fungi by reducing the relative humidity around the area of infection, which plays an important role in the growth of fungi by increasing callus and at the same time dissolves and dissolves the phyto-alexinate that is important in

fighting fungi. It works to delay the aging of the plant and all of this helps reduce the severity of infection (Santo, 2000) and these results are consistent with its findings (Noel *et al*., 2003) and (Nofal *et al.*, 1996) as these studies have demonstrated the important role of the IAA growth regulator in inhibiting the growth of fungi and its ability to stimulate the plant to form some enzyme-inhibiting fungi. Such as kinase, peroxidase and other enzymes that increase plant resistance to fungal infection (Ueno *et al*., 2004).

Conclusions

1. The emergence of many poison producing fungi in local medicinal herbs.
2. The isolates of the fungus *Penicillium* were the most appearance and Hesitation of isolated fungi.
3. Growth regulators have proven highly effective in inhibiting toxic fungi.

References

Abdulelah, A., Z.H. Shehab and D. Abdulkarem (2011). Detection of contamination for some medicinal plants that are locally used with fungal and bacterial pathogens. *Iraqi Journal of market Research and Consumer Protection*, **3(6)**.

Adebayo, A.H., A.O. Abolaji, T.K. Opata and I.K. Adegbrnoro (2010). Effects of ethanolic leaf extract of *Chrysophyllum albidum* Go. On biochemical and haematological parameters of albino wistar rats. *African Journal of Biotechnology*, **9(14):** 2145-2150.

Albaz, M. (2008). The complete reference for the pharmaceutical industry of herbs and medicinal plants At home, medicinal and aromatic plants.

Al-Dhalmi, A.M. and H.A. Nour (2014). Induction of cowpea seedlings *Vigna unguiculata* At resisting fungi *Aspergillus flavus* using plant growth regulators Indole acetic acid and Gibberellic acid. Dhi Qar University Journal. College of education for Girls. University of Kufa, **9(3)**.

Ali, S.M. (2017). Evaluating the pesticide efficiency Baiarovin inhibiting the growth of isolation of fungi *Aspergillus flavus* and the ability to produce Aflatoxin B_1 poison. Kufa Journal of Agricultural Sciences. Department of plant protection - collage of Agriculture-Kufa University-the Republic of Iraq, **9(3):** 138-155.

Al-Saadoun, A.H., S.K. Abdullah and M.S. Shkhanib (2011). Isolation and diagnosis of fungi associated with three types of medicinal herbs used in Iraq. *Maysan Journal of Academic Studies*, **10(18)**.

Al-Wadi, H.M., A.K.J. Al-Rikabi and A.H. Al-Daboun (2011). Study of the susceptibility of some filamentous fungi to the production of antioxidants. Basra Research Journal. Department of Food Science and Biotechnology, College of Agriculture, Basra University. Department of Marine Biology, Marine Science Center, University of Basra, **4(37)**.

Booth, T., S. Gorrie and T.M. Mabsin (1988). Life Strategies among fungal; assemblages on Salicornia europase agg. *Mycol*., **80:** 176-191.

Carlson, H.K., B.I. Fares and J.O. Garder (2002). Aflatoxin in Mycotoxins. Let. Rev, London.

De Smet, P.A.G.M. (1992). Toxicological Outlook on the Quality Assurance of Herbal Remedies In: Adverse Effects of Herbal Drugs De Smet, P.A.G.M.; Hansel,R. and Chandler, R.F.(eds), Vol. 1, New York, Springer-Veriag: 1-27.

De Smet, P.A.G.M. (1995). Health Risks of Herbal Remedies. Drug Saf., Vol. 13 Philadelphia, Lippincott, Williams and Wilkins, 81-93.

Dianese, J.C. and M.T. Lin (1976). A Coconut agar medium for rapid detection of aflatoxin production by *Aspergillus* spp. *Phytopathology*, **66:** 1416-1418.

Emongor, V. (2007).Gibberellic acid (GA3) influence on vegetative growth, nodulation and yield of cowpea (*Vigna unguiculata* L.) *Walp. J.Agron*., **6(4):** 509-517.

Evans, C.K., W. Xei, R.D. Macky and C.G. Mirocha (2000). Biosynthesis of Deoxynivalenol in spikelete of berley inoculated with Macroconidia of *Fusarium graminearum*, plant. *Dis*., **84:** 654-660.

Fernández-Falcòn, M., A. Andres, A. Borges and A. Borges-Prez (2003). Induced resistance to *Fusarium* wilt of Banana by exogenous application of indole acetic acid. *Phytoprotection*, **84:** 149-153.

Fraser, A.M. (2009). Food Safety- Other Hazards. Translated by: Alani, S. R., GNC State University, Raleigh, NC 27695.

George, E.F., M.A. Hall and G.J. De Klerk (2008). Plant Propagation by Tissue Culture. I. The Background.3rd Edn. Publ. springer, Dordercht. The Netherlands, 118-182.

Heperkan, D. (2006).The importante of Mycotoxins and brief history of mycotoxin studies in Turkey. *ARI Bulletin of Istanbul Technical university*, **54:**18-27.

Markarem, E.H. and N. Alldridge (1969). *Can. J. Microbiol.*, **15:** 1225-1230.

Metwally, A.H., E.Y. Mahmoud, Y.M. Samia, R.S. Shokry and Z.N. Hussin (2006). Effect of growth regulators in controlling of peanut root rot fungicides treatment. *J. Agric. Sci. Mansoura univ.*, **31(6):** 3537-3548.

Moni, Z.R., M.A. Ali, M.S. Alam, M.A. Rahman, M.R. Bhuiyan, M.S. Mian, K.M. Iftekharuddaula, M.A. Latif and M.A. Khan (2016). Morphological and Genetical Variability among *Rhizoctonia solani* isolates causing sheath blight disease of rice. *Rice Science*, **23(1):** 42-50.

Mukhtar, F.B. (2004). Differential Growth Responses of Photoperiod-sensitive and Photoperiod-Insensitive Cowpea varieties to planting season and gibberellic acid treatment. *BEST Journal*, **1(1):** 73-78.

Noel, G.M., E. Madrid and L. Lamattina (2003). Indole acetic acid attenuates disease severity in Potato *Phytophthora infestans* interaction and inhibits the pathogen growth in vitro.

Nofal, M.A., M.A. El-Naggar and B.R. Ismail (1996). Plant growth regulators effect on root rot incidence of sweet pepper growth in greenhouse. *Act. Hort*., **434:** 177-184. Abstract.

Paridaen, A. (2009). Investigating the Use of plant Growth Regulators in New Zealand and Australia. Australia Univ. Crop Competition New Zealand study Tour Project Report.

Parmeter, J.R. and H.S. Whitney (1970). Taxonomy and nomenclature of the imperfect state. In: *Rhizoctonia solani*: Biology and Pathology. Parmeter, J.R. (Editor). University of California Press, California.

Rajasinghe, M., K. Abeywickrama and R. Gayasekera (2009). Aflatoxigenic *Aspergillus flavus* and Aflatoxin formation in selected spices during storage. *Trop. Agr. Res. Ext*., **12(1):** 1-6.

Safety, A. (1999). Bulk Botanical Dietary Supplement Recalled by Eudemonic Corporation.

Saito, M. and S. Machida (1999). A rapid identification method for aflatoxin producing strains of *Aspergillus flavus* and *A. parasiticus* by ammonia vapor. *Mycoscience*, **40:** 205-20.

Saleh, M.A. (2009). The effect of date of planting and spraying with gibberellic acid and phosphorous on growth and oil yield.

Santos, P. (2000). Influence of gibberellic acid on Carrot growth and severity of *Alternaria* leaf blight. *Plant Disease*, **84(5):** 555-558.

Shehab, Z.H., D. Abdulkarem and A. Abdulelah (2011). Detection of contamination for some medicinal plants that are locally used with fungal and bacteria pathogens. *Iraq journal of Market Researgh and Consumer Protection*, **3(6):** 2-10.

Tanaka, N., M. Mastsuoka, H. Kitona, T. Asano, H. Kaku and S. Komatsu (2006). Gid1, a gibberellin in sensitive dwarf mutant, Shows altered regulation of probenzole-inducible protein (PBZ1) in response to cold stress and pathogen attack. *Plant cell Environ*., **29(4):** 619-631.

U.S. Food and Drug Administration (2002). FDA Talk Paper: Solar Vitamin and Herb Company Recalls Solars digestive Aid Dietary Supplements Because of Possible Salmonella Contamination. Available at: http:// www.fda.gov/bbs/ topics/ANSWERS/2001/ANS01081.html

Ueno, N., J. Kihara, Y. Honda and S. Arase (2004). Indole- related compounds induce the resistance to rice blast fungus, *Magnaporthe grisea* in barley. *J. Phytopath*., **152(11-12):** 606- 612.