

Isolation and identification species of *Ulocladium* Preuss from different regions in Iraq.

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Abstract

This paper was an attempts to isolation and identification species of *Ulocladium* associated with seeds, leaves ,stems ,fruits of some plants and soil samples from deferent provinces: Babylon, Karbala, Najaf ,Nassiria and Basrah in Iraq, the results were show isolation and identification 11 species of *Ulocladium*, 4 of 11 species were recorded for the first time, also determination the variation in cultural characters and morphological characters such as conidial types were Ulocladioid conidia type or Alternarioid conidia type or both and conidial morphology; obovate or spherical or elliptic , conidiophore types geneculate or not , simple or branched, and primary or secondary conidiophores and evaluated the values of these characters in species identification. The new recorded species for Iraq in this study were : *U.cucurbitae*, *U.multiforme*, *U. populi* and *U.septosporum*

keywords: taxonomic study ,*Ulocladium* , Iraq.

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Introduction

Ulocladium a filamentous fungi ,member of Phaeodictyosporic Hyphomycetes which produce colored conidia, characterized as oval upturned Obovoid. There were inconsistencies about the number of species comprising the genus *Ulocladium* in the world , Simmons was stated (1) that *Ulocladium* includes 9 species , while the results of the study taxonomic at the molecular level of the species of genus *Ulocladium* that includes 13 species (2) , Simmons(3) was refer to the conidial polymorphism ,some types of conidia appear of *Ulocladium*. New of species has been discovery within the genus *Ulocladium* in a number of recent studies in the world, Shipunov et al., (4) recorded new species is *U.populi*, as Wang et al., (5) recorded a new species in north China, *U.cantlous* , while Wang et al., (6) recorded two new species *U.subcucurbitae* and *U. brassicae* in southwest China .Local environmental conditions such as temperatures and solar radiation were affected on fungus characters creation of some of the variations in conidial characters (7). This fungi contribute in breaking down certain molecules giant by acquiring some types on the effectiveness of the enzyme to break down cellulose, amaaloz and xylene (8) , some species of *Ulocladium* were plant pathoges, *U. cucurbitae* cause leaf spotting in cucurbits also cause damage to the type of ripe fruits of cucurbits known *Cucurbita maxima* (9, 10), *U. chartarum* causes necrosis of leaf oak *Quercus pubescens* (11). Ellis (12)maintion to spread of *U. atrum* and *U.botrytis* and *U. consortiale* in Iraq and other countries . Matsushima (13) descriped some of the species of *Ulocladium* in different parts of the world.

Prevous survey studies In Iraq were isolated 7 species of *Ulocladium*(total number in Iraq) ; Zora (14) who was rcoreded four species they were: *U. atrum* and *U.botrytis* and *U.charatum* and *U.chlamydospoum* from soils and palm fields in Iraq . Daraj (15) isolated four species belonging to the genus *Ulocladium* accompanied by four optional salt plants are located in the desert of southern Iraq, they were : *U. atrum* and *U.botrytis* and *U. consortiale* and *U. oudemansii*, while Al-Musawi (16) was isolated five species :*U.alternariae* and *U. atrum* and *U. charatum* and *U.chlamydospoum* and *U. consortiale* okra seedlings from soils in some areas of Basra . Al-Salhi (17) was isolated 7 species: *U.alternariae* ,*U.*

atrum and *U.botrytis* and *U.charatum* and *U. consortiale* , *U. oudemansii* and *U. tuberculatum* channel off the coast of Zubair in Iraq . Hamad (18) was isolated two species: *U. atrum* and *U.botrytis* from the deserts of Iraq . While Al-Zugagi (19) was isolated *U.botrytis* from *Alhagi* roots and palm trees in central of Iraq , and made some *Ulocladium* species ratios were high in the emergence of the sugar cane fields in the Maysan province - Iraq (20).while(21) not isolate any species of *Ulocladium* in forest soils in Mosul province in the North of Iraq.

This study aim to classify *Ulocladium* in Iraq because there was no really taxonomic study targated *Ulocladium* in Iraq itsalfe. beside fluctuation the species number those isolated in all prevous studies that have been performed in Iraq (20,19,18,17,16,15,14) . So the current study target to isolate and diagnose species of *Ulocladium* located in parts of the plant and soils samples collected from different province of Iraq and make comparative study of different phenotypic characters and review its synonyms within the taxonomic treatment of types in Iraq.

Materials and research methods

1-samples collction

In order to isolate and diagnose species of *Ulocladium*, 56 samples were collected included different soils, stems, seeds fruits and roots from different areas surveyed from many provinces in Iraq ; 42 samples were collection from Babylon province middle of Iraq, included leaves and stems of *Alhagi* and *Solsola*,*Salix*,*Capper*,*Narium*,*Eucalptus*,*Olea*,*Ctrius*,*Ficus*,*Myrtius* *Zizphus*,*Lycoperscon* , *Daucus* ,seed of *Medicago*,*Alium* ,*Raphanus*,*Zaemyze* and others plant parts from the resort of Babylon ,Mahaweel , Nile. And assembly of two samples from Karbala province (west of Iraq) included ; soil of the Razzaza desert and agricultural soil . 5 samples were collected from Najaf province(west –south of Iraq) which included samples of rice seed in Alabasiat and Haidari and al-Arian , Alaama and Mashkhab distracts , 5 samples from Nasiriyah province(east south of Iraq) included *Tamarix* , *Solsola* , wheat and and two samples of soil , in addition to the compilation of soil samples

coming from Algaza and soil non-agricultural Saad Square in Basra province (south of Iraq) for the period 2009-2010.

2-Cultural studies

Planted 0.5-1 cm from the leaves and plant stems according to the method (22) and has been planting the seeds according to the method (23) after surface sterilized by 1 % sodium hypochlorat for 2-3 minutes , soils suspension prepared and the cultivation on potatoes sucrose agar (24), has been taking measurements dimensions of 15-20 conidia and conidiophores and adopted in taxonomic terminology (1,3 4, 12.13) , diagnosed species and photoed conidal types and conidiophores of species under study by digital camera DCE-2 equipped microscope compound NOVEL. Diagnosed types depending on the taxonomic key for Simmons (1) and the description contained in each of the (1,3 4, 12.13)

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3-Calculate frequency percentages for species

The percentages were calculated for the frequency of *Ulocladium* species in samples collected in this study through the adoption of the following equation

Percentage frequency = number of impressions type / total number of samples studied $\times 100$

Results and Discussion

1-Isolation and diagnosis of *Ulocladium*

11 species were isolated and identified belonging to the genus *Ulocladium* from different samples and different locations in Iraq (Table 1) , and varying percentages of the frequency of each species under study by sources of isolation . Frequency of *U. alternariae* and *U.atrum* and *U. botrytis* and *U.charatum* at high rates with different plant parts (Table 1) , these findings were consistent with the overall studies that have isolated some of these species of different desert plants and soils (18,17,16,15) , but this study recorded the frequency of these types some kinds of seeds such as wheat , barley and rice were recorded these species seeds in previous studies has been linked to its presence as saprophytic on

these seeds, these fungi possesses high diversity enzymatically (8) and the ability to parasitism (9.10) while the frequency of other species and has been associated with specific plants (Table 1) may be due to specialization *U. cucurbitae* on cucurbits and not others (10,9).

Table 1: *Ulocladium* species and isolation sources and counted number and frequency percentage of species.

No	species	Habitate	Number of isolates				Total	%F
			Lv&St	S t.	S o.	F & R		
1	<i>Ulocladium alternariae</i>	<i>Alhagi raecorum</i> , <i>Populus</i> , <i>Ficus</i> sp, <i>Hordeum</i> .B.	10	1			11	13.2
2	<i>U.atrum</i>	<i>Oryza</i> sp, <i>Lycopersicom</i> , <i>Daucus</i> sp, <i>Salsola</i> , <i>Tamarex</i> sp .B.,K.,N.	11	10	2	2	25	30.1
3	<i>U.botrytis</i>	<i>Cactus</i> sp, <i>Triticum</i> sp, <i>Sorgham</i> , <i>Lycium</i> sp	9	5	1		9	10.8
4	<i>U.charatum</i>	<i>Alhagi raecorum</i> , <i>Oryza</i> sp, <i>Hordeum</i> , <i>Salsola</i> .B	12	8		1	21	25.3
5	<i>U. consortial</i>	<i>Capparis</i> sp, <i>Daucus</i> sp,B.				2	2	2.8
6	<i>U. cucurbitae</i> *	<i>Cucumis</i> sp.B.				1	1	1.2
7	<i>U. multiforme</i> *	<i>Lycium</i> sp	1	1	1	1	4	4.8
8	<i>U. oudemansii</i>	<i>Lycium</i> sp, <i>Triticum</i> sp,B.			1	1	2	2.4
9	<i>U. populi</i> *	<i>Hordeum</i> , <i>Capparis</i> sp.B.	1		1		2	2.4
10	<i>U. septosporum</i> *	<i>Salsola</i> , <i>Tamarex</i> sp.B.	2		2		4	4.8
11	<i>U. tuberculatum</i>	<i>Triticum</i> sp, <i>Al.raecorum</i> .B	1		1		2	2.4

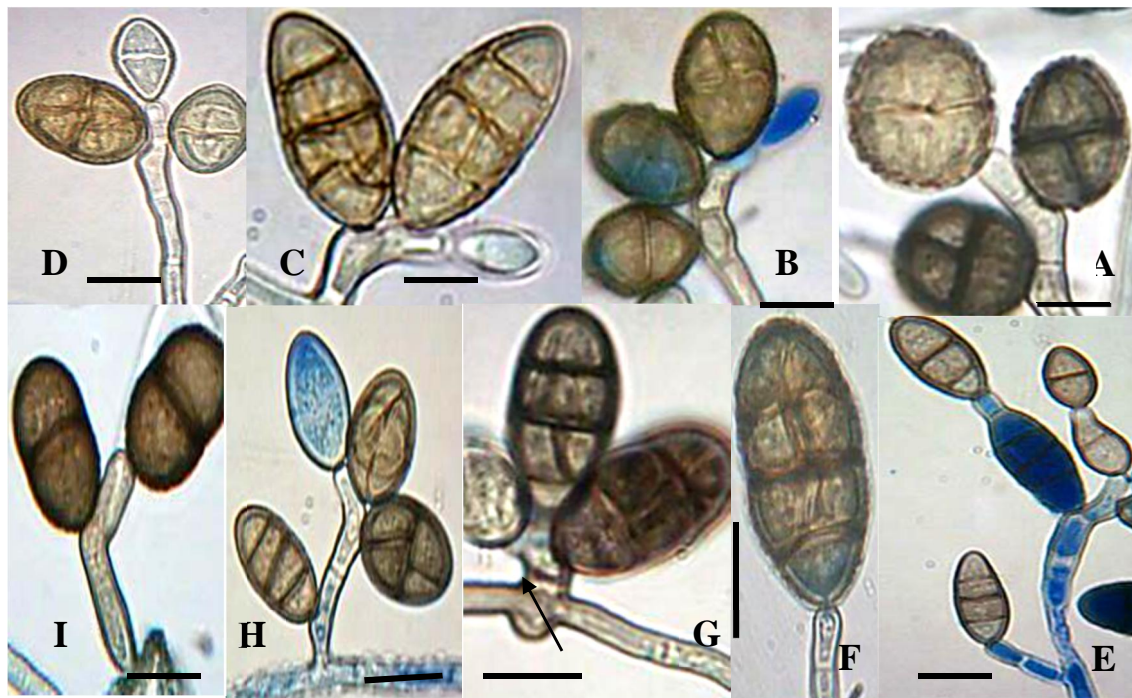
B=Babylon province,K=Kerbla province,N=Najef province,So=soil,St=stem,F=fruit,L=leaves.F=Frequency.

Taxonomic characteristics of *Ulocladium* species

The phenotypic characteristics of *Ulocladium* species showed variation had importance of each taxonomic character, conidiophores , conidia shapes and colonies characters showed good taxonomic values in the description of the species , and it was for characters of conidia importance in terms of the shapes and the number of septa and the extent of the presence of true and pseudo-necks, one or both or their absence altogether and were conidial type of the most important taxonomic criteria that have shown variations and was one of the qualities important in the diagnosis of some species that have been isolated , and included conidial variations; number and arrangement of septa ; has septa browser one another longitudinally to give the character decussatio cruciate septate or be a septa browser and other tangential gives septa shaped (Y-septa) may characterize one type or species groups are close , or there are a number of septa make conidia multi- cells (8-14) cell and number of conidial cell character had taxonomic characterize for other species , in addition to characters conidial surface being full or lobular entire universe lobed or smooth surface or rough (Figure 1).

The conidial shapes of *Ulocladium* showed a wide range of shapes from obovale , spherical ,elliptical , conical and tuber shape and most of these shapes had taxonomic characters were diagnostic for some species , as in Figure 1 , and appeared conidial in two types ; first known primary ulocladium conidia that proliferated from primary conidiophores ,this type of conidia composed of 2-4 (6) cells , which are characterized by base pointed - round in at the early stages of evolution and unfolding quickly become spherical single septa browser and septa longitudinal or tangential one and be a rumor. The second conidial type is known primery alternarioid conidia type, initial be elliptical elongated a little known style primery alternarioid conidia arise from primery conidiophores .each conidia consisting of 2-7 septa to cross-sectional and a number of septa longitudinal or tangent , or both may be conidia pedunculated or non- pedunculated and contrasts along the neck has become a true neck to the secondary conidiophore when it holds a number of secondary conidia .The Secondary ulocladioid conidia type and Secondary alternarioid conidia type term followed according to the terminology adopted by the (4) in the original description of the type *U.*

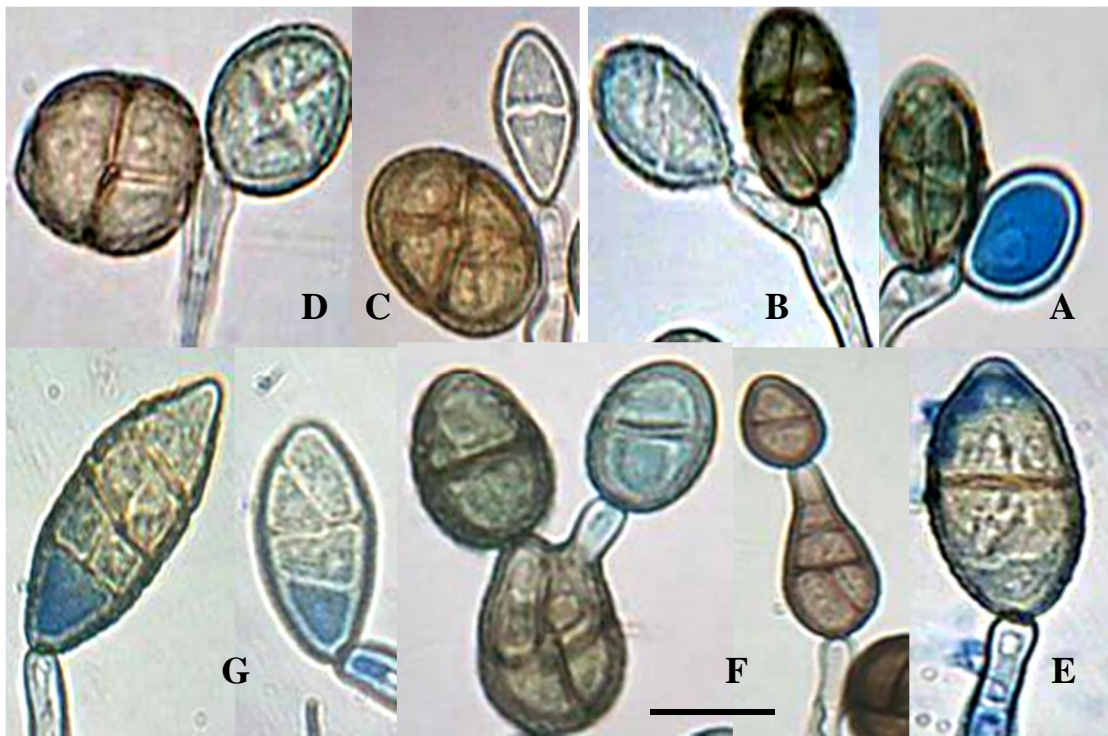
populi, and consistent results of this study with what referred to Simmons (3) of that conidia character may be a diagnostic character, explains (Figure 1) in the most important forms of conidial alteration and the number of septa and arrange them on the conidia stand in some species of *Ulocladium* isolated and diagnosed in this study.



Figur (1): variation rang in the types of conidial shape of *Ulocladium* A- primary ulocladium conidia initial return to *U.atrum*, B: primary ulocladium conidia is known that a decade on the stand in *U.botrytis*, C: primery alternarioid conidia type initial multiple septa in *U. oudemansii*, D: Conidiaophore multi-site Multilocal conidia in *U.tuberculatum*, E: Conidiophore multi-site Multilocal conidia in *U.alternariae*, F: conidiophore single-site Unilocal condium in *U.multiform*, G: primery alturnarial conidiophore arise of cells generated in the convergent sites (label by arrow) in *U.consortiale*, H: primery ulocladium conidia initial multiple septa successive arrangement in *U.charatum*, I: conidiophore and conidia single septum in *U.cucurbitae*, (scale: 10 microns).

Variation of conidial Proliferation in *Ulocladium*

The proliferation of conidial from conidiogenous cell was showed variation in their attachment with conidiophore ,shape of conidial base being round or narrow , the location the number and direction of the primary septa before the stages of maturity of these conidia , the juvenile conidia that froliferated from conidiogeous cell was single cell had obovate or elliptical shape (Figure 2 –A), and the septa development depends on the type conidia ; If ulocladium conidia consists septum browser then consists septa longitudinal or tangential (Figure 2 - DB), and if alternarioid conidia consists septa browser and other longitudinal then followed be a number of septa to cross-sectional the longitudinal or tangential (Figure 2 GE), that presented the results of this study show the development stages of conidia and the extent of variation form conidia unfolding of the conidiogenous cell in both ulocladium conidia initial type(Figure 2 A-D) than it is in the breeding conidia from the initial alternarioid conidia type, Secondary alternarioid conidia type (Figure 2 E - G) was one of the important results not addressed by all previous studies in Iraq that indicated in the over all findings to isolate the 7 species of *Ulocladium* (14,19,18,17,16 , 15, 20).



Figure(2):Variation range of conidial Proliferation in *Ulocladium* .A - D ulocladium conidia represent a sequence early stages to development and the beginning of the septa browser and be a septa longitudinal or tangential : E-G: alternarioid conidia multiple septa , (scale: 10 microns).

4- Variation in the characteristics of the conidiophore types of *Ulocladium*.

The results of this study showed the conidiophores in the species of *Ulocladium* is the kind of specialist Macroneumatous, and was a conidiophore in some species as a diagnostic character so limited shapes of conidiophore in one species of primary conidiophore arised single, erect, , undulating and the absence of secondary conidiophores in some species such as *U. alternariae* , *U. consortiale* , *U. cucurbitae*, *U. multiforme*, *U. oudemansii* and *U. tuberculatum* (Figure 3 AD, F), or the presence of primary conidiophores beside secondary one arised from alternarioid conidia shape as in *U.charatum* *U.populi* and *U. septosporum* (Figure - 3E) ,also varied in the number of conidiogenous cells those carry on , carry a conidiogenous cell has one terminal ,unilocal conidium arise conidia including single and conidiophore mono site Unilocal conidium (Figure 3 A-B), or carry several conidiogenous cells termed multilocal conidia from one side or located alternative , including a number of conidia (Fig. 3 C, D, E) .our results coincidence with the report of Matsushima (13) the importance of identifying the type of coniiophores and type of conideogenous cells single site or multiple sites in the species of *Ulocladium*.

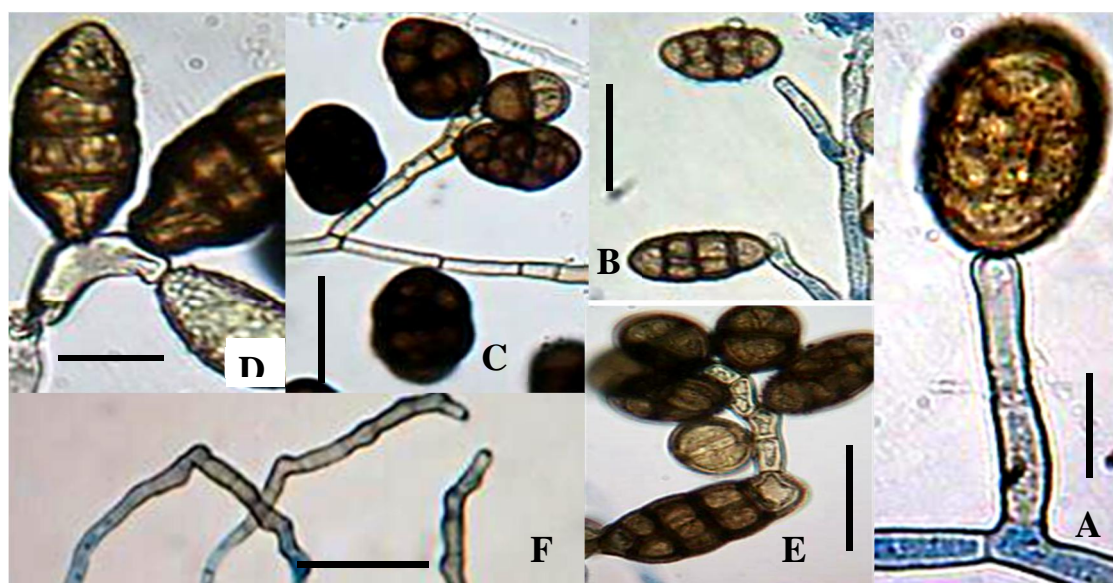


Figure (3): Variation range of conidiophores in *Ulocladium*; A-B: primary conidiophores arised at single-site known a Unilocal conidium, C: primary conidiophores arised multi-site on both sides of conidiophore, D: primary conidiophores arised multi-site conidia Multilocal conidia arised on one side of the conidiophore , E: secondary conidiophore holder secondary conidia , F- undulating conidiophores , (scale: 10 microns A- D. exceptin the rest of the shapes 25 microns).

5- Description of species recorded for the first time in Iraq

In this study, isolate and diagnose 11 species of *Ulocladium*, was presented the most important qualities of these species (Table 2). four species of which were recorded for the first time in Iraq ,They were *U. cucurbitae* and *U. multiforme* and *U. populi* and *U. septosporum* .

Description of species recorded in this study- :

1- *Ulocladium cucurbitae* (Letendre & Roum.) Simmons 1982

Synonym : *Alternaria cucurbitae* Letendre & Roum. 1886.

Colonies olive dark , flat ; conidiophore 10-80 micron , upright or undulating simple or branched multiple sites or a single site conidia , conidia 13 - 25 × 12-15 microns , mostly from ulocladium conidia format; conidia not take the uniform , spherical obovate or elliptical shape, no septum single browser and other linear or may miss the septum longitudinal cell 2-4 cells may be of 6 cells , a characteristic unique to this type for the rest of the species .in this study as not to notice dual

conidia and triple cells in the rest of *Ulocladium*, surface of conidia rough (Figure 4) , and limited the frequency of this type with the fruits of cucurbits these findings are consistent with the results of a number of studies that have indicated the ability of this type of infecting cucurbits (9 , 10, 25) , and of conidia and diversity were not much different from the qualities in the description to the indicated number of studies (9 , 10, 25) except for the difference in the lengths some conidia where it was shorter so varied dimensions of $25 - 32 \times 13.4$ microns (9) , conidia in terms of septa chonidiophores in isolation current closer to the qualities cited by Simmons (3) the return of deviation in some of the qualities for environmental reasons or because of the species of *Ulocladium*, did not isolate and diagnose *U. cucurbitae* in Iraq previously , may be attributed to the fact that some of the qualities of *Ulocladium* is similar to the type *U. atrum* and which confirms that the adoption of such a group within the *Ulocladium* and *U. atrum* group by Simmons (3), or to the fact that most of the studies that have been performed in Iraq did not target isolation the fungus from watermelon (19,18,17,16,15,14) or to the fact that fungus intrudes on cucurbits (10.9) and may not exist in desert soils or saline plants.

habitate: This fungus isolated for the first time in Iraq from rotting black spots in local watermelon was collected in August of 2009 from Babylon province . slide of fungus kept in University of Babylon under herbarium number Ulo 1Z.. , Have registered this species for the first time by Simmons (26) in 1982 after correcting the name *Alternaria cucurbitae* Letendre & Roum 1886 to *Ulocladium cucurbitae* (Letendre & Roum.) Simmons 1982 , a fungus parasitic on cucurbits .The fungus causes of a distemper spotted leaves Pumpkin , Cucurbit leaf spot and rotting fruits of cucurbits (25.10).



Figure (4): Conidia and conidiophores in *Ulocladium cucurbitae*. (scale: 10 microns).

Ulocladium multiforme Simmons, Can. J. Bot. 76 (9) : 1537 (1999) .

Colonies brown - yellow ; conidiophores 45-50 micron , undulating genculate carry a number of ,dimensions $20-35 \times 15-20$ microns (Table 2) , mostly from the type conidia alturnaria shape, do not take the form of a fixed conidia often be as elliptical elongated to oval round in shape , containing a number of septa are often 3-5 septa to cross-sectional and the other longitudinal cell count conidia 7-8 (10) cells , necks absent (beaks) , as well as conidiophore secondary (known pseudo-neck) , absent of secondary conidia , conidia had smooth surface - rough , conidia lobular (Fig. 5) . characters not different from the original description mentioned (3).

. habitate: this species have been isolated from plant parts *Lyccium* sp and *Salsola*.sp resort in the Babylon province . permanent slide of fungus was kept in the University of Babylon herbarium at number Ulo.2 Z. The isolation of this species for the first time from the sandy soils in the state of Manitoba in Canada by Simmons (3).



Figure (5): Conidia and conidiophores of *Ulocladum multiforme* A-C: conidiophores undulating , multi-site conidia ,. D: conidiophores is undulating single- site conidia , (scale: 10 microns).

Ulocladium populi Simmons, Newcombe & Shipunov, sp. nov, Persoonia 23,180. , 2009.

Colonies black -brown, flat , abundance with dense conidia; conidiophores $125 - 137.5 \times 4-5$ microns , simple in two types , the first type is a primary genculate holds a number of conidia $45-25 \times 10-15$ microns (Table 2) , conidia in two types ; ulocladium conidia or Alternaria conidia . The second type is secondary conidiophore is arise from secondary conidia but in two types ; The secondary Ulocladioid conidia type or secondary Alternarioid conidia type (4) in ranging forms of spherical polymorph to spherical elongated , septa in conidia ranging from a single to 5-7 septa,cross-sectional and longitudinal number of septa ranging from 1-3 longitudinal or tangential , conidia smooth surface to rough (Fig. 6) characters of conidia and diversity does not differ much from the original description mentioned by Shipunov and his

group (4) except for the difference in the lengths of conidia and conidiophores where was the longest in the current isolation , despite the original description of the fungus may be within those variation in the length of the conidiophores (50 × 4-5 microns) may be up to 150 microns , these variations may be dueto environmental effects or the cause of the phenomenon of phenotypic diversity that characterize some species of *Ulocladium* as pointed out by Simmons (3) and my appearance similarty between this species and *U.atrum* qualities (3) , but it differs from the evolutionary (4).

habitate : This species was isolated for the first time in Iraq from *Alhagi graecorum* and *Salsola* sp . slide kept in the herbarium of University of Babylon with number Ulo. 3Z. . The record of this type for the first time on the plant *Populus trichocarpa* by Simmons and his group in Lapwai Canyon, Idaho in the United States in 2009 (3).

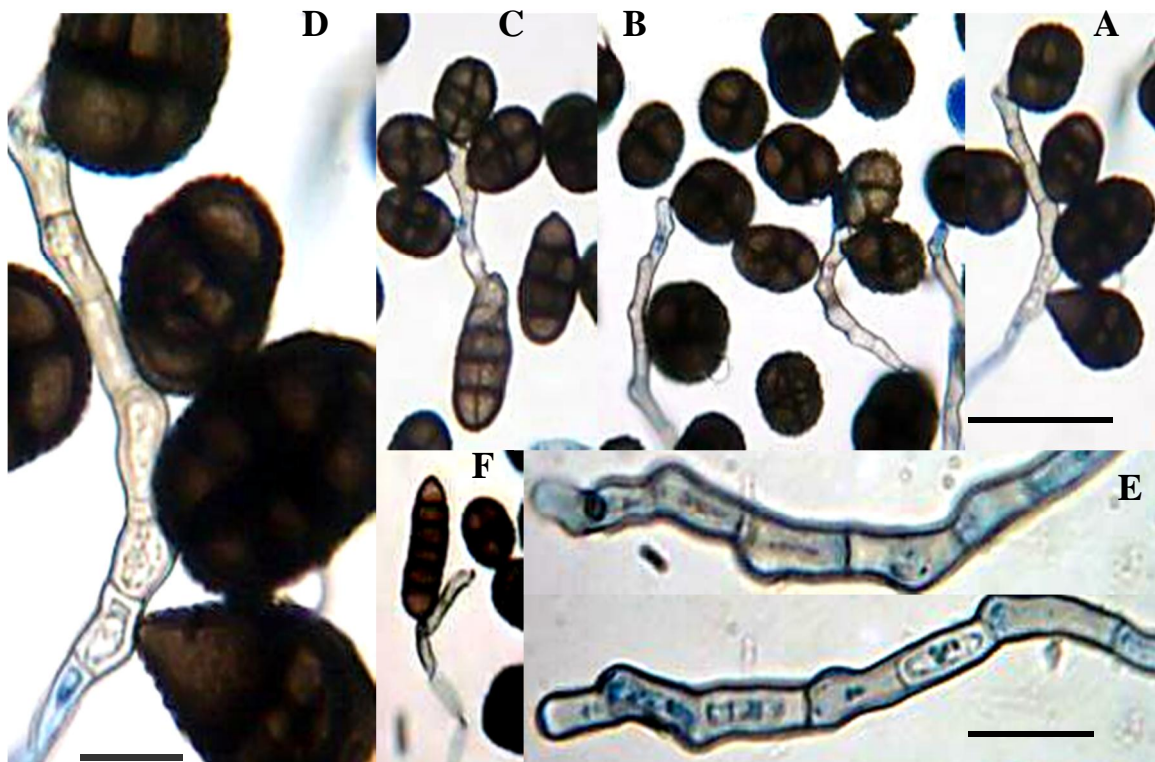


Figure (6): Conidia and conidiophores in *Ulocladium populi*, A, B, D, E: undulated conidiophores , C: Alternaria conidia with holder secondary conidia holds minor conidia , F: Alternaria conidia elliptical -elongated ,

(scale: 25 microns in A, B, C, F. scale: microns with the exception of D and E scale: 10 microns).

Ulocladium septosporum (Preuss) Simmons, Mycologia 59 (1): 87 .1967
Synonym : *Helminthosporium septosporum* Preuss 1851.

Colonies brown - Yellow , flat to arise ; conidiophores 32-140 microns , undulating Genuclate, branching, conidia carrying a number of septa 3-7 septa thick dark-colored , most of conidia were Alternaria conidia type, $22 - 30 \times 10-20$ microns (Table 2); Conidia shape ;elongated elliptical or elongated oval , multi-cellular cell .conidia 12-14 cell , absent Ulocladioid conidia replaced by some conidia multicellular with short neck (C-7), conidia lobular , smooth - rough surface (Fig. 7) , coincidence characters with descriptions which reported by Simmons (1) with the exception of some variations in characters of conidia which may be affected by environmental conditions , isolated from two halophytes plants ;*Salsola* sp and *Tamarix* sp or affected by their exposure to varying ranges of temperatures (7).

habitate : isolate the fungus for the first time in Iraq, *Alhagi graecorum* and *Salsola* sp .kept fungus slidein University of Babylon herbarium in number Ulo. 4Z. . name change of fungus by Simmons in 1967 .



Figure (7): Conidia and conidiophores of *Ulocladium septosporum*, initial conidiophores (labeled with arrow) and secondary conidiophore (B and C label with arrow) and conidia with multiple transverse and longitudinal and tangent septa. primary and secondary conidiophores, (scale: 10 microns).

The results conducted to isolate and diagnose 11 species of *Ulocladium* in Iraq underscore the importance of taxonomic studies that target specific genus, as well as the diversity of samples used targeted by the study of fungi that associated with soils and parts of various plant (Table 1) has provided a better opportunity to isolate these types compared with the results of previous studies in Iraq (19,18,17,16,15,14,20), which isolated 7 species of *Ulocladium* from a large area in Iraq, coincidence with previous studies on *Ulocladium* in the channel of Khor Al-Zubair in Basra (17) and with some soils palm fields in Iraq (14), in addition to accompany the species of *Ulocladium* plants from different sites in Iraq, especially in areas exposed to solar radiation, may explain the ability of endemic species of *Ulocladium* in these regions being of fungi color that resides in such environments because they melanin pigment, which protect conidia from the effects of environmental conditions such as exposure to solar radiation directly with the exception of soils forest, which dominates the filamentous fungi on the transparent colored fungi (21)

The total number of *Ulocladium* species in the current study and previous studies in Iraq, 12 species if they were referring to isolate the species *U.chlamydospoum* of soils palm fields in Basra (14) as well as in the study of al-Musawi (16) was not able to study the current isolation of this species. The total number was closer to the total number of registered species in the world, which amounted to 13 species, according to (2), and the results of this study has coincided with most of the results of previous studies in Iraq (19,18,17,16,20), and with the results at the global level in terms of the number of *Ulocladium* spp.(2) and given the task of image for taxonomic situation in Iraq.

Table(2):The main characters of *Ulocladium* spp.

species	conidiophore		Conidia characters			
	length	Con.loci	diametio	Conidial type	No.of septa	Neck or secondary conidiophore
<i>U. atrum</i>	5-50	Multiloci	6-50 × 6-8	Ulocladioid	۳-۱	present
<i>U. botrytis</i>	60-100	Multiloci or monolocus	15-18 (28) ** × 15	Ulocladioid & Altarnaria	(۲) ۱	absent
<i>U. charatum</i>	80-100	Multi or mono	16-25 (40) × 10-15	Altarnaria	(۳) ۲-۱	absent
<i>U. consortiale</i>	100-130 22-52	Multi or mono	20-50 × 12-16 24-40 × 5-10 3-7	Altarnaria	۳-۱	present
<i>U. cucurbitae</i>	10-80	Multi or mono	13-25 × 12-15	Ulocladioid	۷-۳	absent
<i>U. multiforme</i>	45-50	Multi or mono	20-35 × 15-20 3-5	Ulocladioid & Altarnaria	(۲) ۱	absent
<i>U. oudemansii</i>	20 -25	Multi	11-50 × 4-8	Altarnaria	۵-۳	absent
<i>U. populi</i>	125-137.5	Multi	45-25 × 10-15 * 1-3 (5) **	Ulocladioid & Altarnaria	۳	absent
<i>U. septosporum</i>	32-140	Multi or mono	22-30 × 10-20 3-14	Altarnaria	- ۱ ** (۵) ۳	absent
<i>U. tuberculatum</i>	70-150	Multi or mono	20 45 × 18-30 1-3	Altarnaria	۱ ۴-۳	present
<i>U. alternariae</i>	۱۵۰-۷۰	Multi or mono		Ulocladioid & Altarnaria	۳-۱	absent

*=conidia multitypes.**()= rare values

Ulocladium spp. that isolated in this study to support the indications of taxonomic evidences required for molecular detection to give better clarity to the ranges of variations among species and may be available as such evidence in a prospective study of the types of *Ulocladium* in Iraq, but that the lack of such a signs may not greatly

reduce the importance of any of the studies that have adopted the phenotypic characteristics of fungi (12) , and confirms what has been referred to Pryor (27) . Perhaps the results of this study something worthwhile they gave important review of the situation taxonomic *Ulocladium* spp. in Iraq , and if it had been completed , such as so future studies on other races dating back to the filamentous fungi with spores colored divided (Phaeodictyosporic Hyphomycetes) and using the best evidence taxonomic may give better perceptions about the number of species of these races , especially in Iraq and the Arab world.

References

- (1) Simmons, E. G. 1967. Typification of *Alternaria*, *Stemphylium*, and *Ulocladium*. *Mycologia*, 59:67–92.
- (2) Runa, F., Park, M. S., and B. M. Pryor, 2009. *Ulocladium* systematics revisited: phylogeny and taxonomic status. *Mycological Progress*, 8:35-47.
- (3) Simmons E.G. 199[^]. Multiplex conidium morphology in species of the *Ulocladium atrum* group. *Can. J. Bot.*, 76(9): 1533–1539.
- (4) Shipunov, A.; A. K. Raghavendra; R. J. Ganley and G. Newcombe 2009. *Ulocladium populi* E.G. Simmons, G. Newcombe & A. Shipunov, *sp. nov.* *Persoonia*, 23: 180–181.
- (5) .Wang.Y.,Yun-Fei Pei.N.R.O'Neill and Xiu-Guo Zhang . 2010 *Ulocladium cantlous* sp.nov.isolatef from North of China:its morohology and molecular phylogenetic position. *Mycologia*, 102(2): 374-383.
- (6) Wang, Y., L. C. Bruno and X. Zhang . 2008. Two new species of *Ulocladium* from Southwest China *Mycologia*, 100(3): 455-459.
- (7) Leach,C.M. 1970. Effect of temperature on conidium characteristics of *Ulocladium chartarum* and *Stemphylium floridanum*. *Mycologia*, 62:1071–1076.
- (8) Pedersen , M., M. Hollensted, L. Lange and B. Andersen. 2009. Screening for cellulose and hemicellulose degrading enzymes from the fungal genus *Ulocladium* *International Biodeterioration & Biodegradation*, 63 : 484-489.
- (9) Auger J., M. Esterio and L. Meza . 2006 . Identification and control of *Ulocladium cucurbitae*, causing agent of black rot of pumpkin (*Cucurbita maxima*) . *Cien. Inv. Agr.*, 33(1): 25-32.
- (10) Zitter, T.A. and L.W. Hsu. 1990. A leaf spot of cucumber caused by *Ulocladium cucurbitae*, *New York Plant Dis.*, 74 : 824-827.

- (11) Vannini, A, and A.M. Vettrain. 2000. *Ulocladium chartarum* as the causal agent of a leaf necrosis on *Quercus pubescens*. Forest Pathol., 30:297–303.
- (12) Ellis ,M.B. 1976 .More Dematiaceous Hypphomycetes. CMI, Kew, Surrey England.
- (13) Matsushima, T. 1975. Icones Microfungorum a Matsushima Lectorum. Kobe, Japan. p.161.
- (14) Zora , S. E. . 1988. Isolate and diagnose Fungi of some palm fields in Iraq . Thesis , Faculty of Science, University of Basra .
- (15) Darag, H. F. . 1989. Study of fungi associated with some desert plants in southern Iraq . Thesis , Faculty of Education , University of Basra .
- (16) Al-Musawi , L. Abdul -Latif Ali 1998 . Study of fungi and fungal pathogens throw the okra seedlings present in the soils of some areas of Basra . Master Thesis , Faculty of Science, University of Basra .
- (17) Al-Salhi , M. H . 2002. Study on the filamentous fungus endemic to the Channel coast of Khor Al-Zubair . Thesis , Faculty of Science, University of Basra .
- (18) Hamad N S.. 1998. Study community fungi minute in the desert of Iraq . Ph.D. thesis , Faculty of Science, University of Babylon .
- (19) Al-Zugagi , R. N.. 2000. Study fungal community to soils and Acol palm plants in the provinces of Babil and Karbala. Master Thesis , Faculty of Science of the University of Babylon .
- (20) Saleh, Y. A. 2004. Society for the study of fungi sugar cane fields in the Maysan / Iraq . Ph.D. thesis , Faculty of Science, University of Basra .
- (21) Bader , Salah Mahdi . 1996. Study society for soil micro- fungi forest of Mosul . Ph.D. thesis , Faculty of Science, University of Basra .
- (22) Dugan F. M., S. L. Lupien, M. Hernandez-Bello, T. L. Peever and W. Chen . 2005 . Fungi Resident in Chickpea Debris and their Suppression of Growth and Reproduction of *Didymella rabiei* under Laboratory Conditions . J. Phytopathology , 153: 431–439.

- (23) Gwary , D.M., D.M. Mailafia AND T.J. Jibrin . 2006 . Survival of *Colletotrichum sublineolum* and Other Seed-borne Fungi in Sorghum Seeds after Twenty Months of Storage . Int. J. Agri. Biol., 8(5): 676-679.
- (24) Sujhail, M., F. Irum, T. Jatt , F. Korejo and H. Abro. 2007 . *Aspergillus mycoflora* isolation from soil of Kotribarrage Sindh, Pakistan . *Pak. J. Bot.*, 39(3): 981-984.
- (25) Zitter T.A. and L.W. Hsu. 1992. Influence of temperature and fungicide on germination, growth and virulence of *Ulocladium cucurbitae* on cucumber. *Phytopathology*, 82: 358- 362.
- (26) Simmons, E.G. (1982). *Alternaria* themes and variations (11-13). *Mycotaxon*, 14(1): 44-57.
- (27) . Pryor, B. M., and D. M. Bigelow. 2003. Molecular characterization of *Embellisia* and *Nimbya* species and their relationship to *Alternaria*, *Ulocladium*, and *Stemphylium*. *Mycologia* , 95:1141–1154.