Marsh Bulletin *4(2)(2009) 137-147*

MARSH BULLETIN

Amaricf_Basra office@yahoo.com
abdulalwan@yahoo.com
.marshbulletin@yahoo.com

New Record of Fungi from the Sediments of Shatt Al-Arab River and Its Creeks

Z.F. Mansower

Department of Biology, College of Science, University of Basrah, Iraq.

Abstract

Six fungal species were isolated for the first time in Iraq from surface sediment samples collected from different sites along Shatt Al –Arab river and its creeks at Basrah, these fungi include three hyphomycetes species**:**

Aspergillus campestris , *Myceliophthora* anamorph of *Corynascus sepedonium*,and *Tetracoccosporium paxianum*, and three ascomycetes species: *Emericellopsis glabra, Rhexothecium globosum* ,and *Sphaerodes quadrangularis.*

1-Introduction

The surface sediments of Shatt Al –Arab river inhabiting with different fungi, several previous papers dealt with the fungal population in this area (Abdullah and Abbas a,b,c,1994; Abdullah and Abbas,1997; Abdullah and Hassan,1995; Abdullah *etal*.,2000,2007; Al–Dossary,2004; Cannon *et al*.,1995 and sivanesan *et al*.,1993).

The present study revealed an additional records of fungi isolated from the surface sediments of Shatt Al – Arab river and its creeks at Basrah.

Living and dried culture of the reported species have been deposited in the Basrah university herbarium (BSRA).

2-Materials and Methods

Bourt and Johnson (1962) method was adopted for collection of samples, the dilution plate (Johnson *et al*.,1959), treatment with 5% acetic acid (Furuya and Natio, 1979), and treatment with 2% phenol furuya and Natio (1980) methods were used for isolation of fungi, three types of media.potato carrot agar (PCA, 20g peeled

potatoes, 20g carrot, 20g agar, 1L distilled water) and malt extract agar (MEA) and Oatmeal agar (OMA) Himedia,India were used for isolation of fungi, 250mg/l of chloramphenicol was added after autoclaving for each medium to inhibit bacterial growth, the petri plates of culture media incubated at 25 and 45C°, all fungal species were described and identified in the laboratory according to:

Arx (1974); Arx *et al.* (1988); Ellis (1971,1976); Garica *et al*.(2004); Matsushima (1975); Raper and Fennell (1973); Van oorschot (1980);Varga *et .al*. (2007).

3-Results and Discussion

Aspergillus campestris Christensen, Mycologia 74:212,1982. (Figs.1)

Colonies grow well on MEA at 25C° , velvety sulphur yellow reverse black, conidial heads biseriate radiate, conidiophores usually 400-800 µm long smooth, vesicle globose to elongate 18.9-20 ×18-19.5 µm, fertile over the entire surface, conidia thin walled hyaline to pale yellow slightly ellipsoidal and smooth 2.6-3.5 × 2-3 µm.

Specimen examined: Isolated from sediment sample collected from saraji canal, dried culture (BSRA 11065).

Our isolate show good growth at 25C° and restricted growth at 37C° while the original isolate will not be able to growth at 37C° and show restricted growth at 25C° also the conidiophores were smaller than the original isolate.

This species belongs to *Aspergiullus* section *candidi*, and isolated from soil in U.S.A and Canada and differs from all other species belonging to this section in the formation of sclerotia which never produce in this species (Varga *et .al*. ,2007).

Emericellopsis glabra (Beyma) Backus and Orpurt. Mycologia 53:64-83, 1961 (Figs.4-7).

Colonies grow well on PCA reaching 6 cm in 14 days at 25C° reverse black, ascomata globose non ostiolate sub hyaline 100-300 µm in diameter, asci 8-spored globes to sub globose 8-9.3 µm in diameter with a thin evanescent wall, ascospores broadly ellipsoid to ovate one celled brown 7.3-7.9 × 3.9-5 µm, commonly provided with 3 delicate hyaline longitudinal wings that are variable in shape but often triangular.

Conidial state: *Acremonium* like species conidiophores hyaline septate near the base, conidia 1- celled hyaline ellipsoid 7.9-13.3 × 1.9-2.8 µm.

Specimen examined: isolated from sediment sample collected from Shatt Al-Arab river dried culture (BSRA 11066).

This species isolated previously from soil and marine environment in U.S.A. and

Netherlands, and known for its ability to produce antibiotics that inhibit the growth of bacteria.(Zuccaro *et al*, 2004).

Myceliophthora anamorph of *Corynascus sepedonium* (Emmons) v.Arx, Stud.Mycol. 8:21,1974 (Figs.2-3).

Colonies grow rapidly on PCA at 45C° filling the petri dish in 10 days, initially white becoming pale to sulfur brown, reverse cream to pale brown, aerial hyphae fertile 1-1.5 µm wide, conidia smooth walled becoming verruculose and slightly thick walled mostly globose to obovoid borne singly on short narrow protrusions or 1-2 conidia may be borne on globose, frequently ampliform swellings 4-17 ×4-11 µm.

Specimen examined: Isolated from sediment sample collected from Abu. Al-Khasib, dried culture (BSRA11067).

This species formerly placed within the genus *Sepedonium* or *Chrysoeporium* but the blastic conidia and ampulliform swellings place the fungus in *Myceliophthora*, also this species strongly resembles *Corynascus novoguineensis* except in that the conidia of this species are less thick-walled and verruclose (Van oorschot, 1980).

Rhexothecium globosum Samson and Mouchaca,Can.J.Bot.53:1634-1639,1975 Figs. (8-10).

Colonies growing slowly on OMA attaining a diameter of 2.5 cm within 14 days at 25C° , colony color white with numerous ascomata reverse white.

Ascomata globose non ostiolate with pseudoparenchymatous walls 125-240 µm In diameter, asci abovoidal to clavate 13-20 × 6-13 µm, eight spores with a thin evanescent wall, ascospores one celled, globose without germ pore, smooth to finely roughened 5-6 µm in diameter, conidial state absent.

Specimen examined: isolated from sediment sample collected from Shatt Al – Arab river near Qarmat Ali, dried culture (BSRA11068).

This genus is recorded for the first time in Iraq and the isolate in this study have slightly larger asci and ascospores than the species isolated by Samson and Mouchaca.

This species previously isolated from the desert soil in Egypt and its closely related to the genus *Eremomyces* but they can be distinguished by the inequilaterally ellipsoidal to reni-from hyaline ascospores of *Eremomyces* (Samson and Muchacea,1975).

Sphaerodes quadrangularis Garica *et al*., stud. Mycol. 50:63-68,2004 Figs.(11-12).

Colonies growing slowly on PCA at 25C° , dark brown, reverse brown, mycelium composed of hyaline to pale yellowish

brown, smooth walled hyphae, ascomata superficial scattered or aggregated in small groups, pyriform to subglobose ostiolate the neck very short 170-200 × 120-170 µm, ascomatal wall membranaceous pale yellow to yellowish brown, setae straight hyaline to pale yellow, asci 8-spored ovoid to clavate 65-80 × 20-22 µm thin walled evanescent, ascospores first hyaline becoming brown to dark brown, thick walled, fusiform 20-26 × 11.3-12.6 µm, reticulate with two germ pores, anamorph absent.

Specimen examined: this species isolated from sediment sample collected from Shatt Al-Arab river near the saraji canal, dried culture (BSRA11069).

The dimension of ascomata and asci of the species in this study appear somewhat smaller than from the original species.

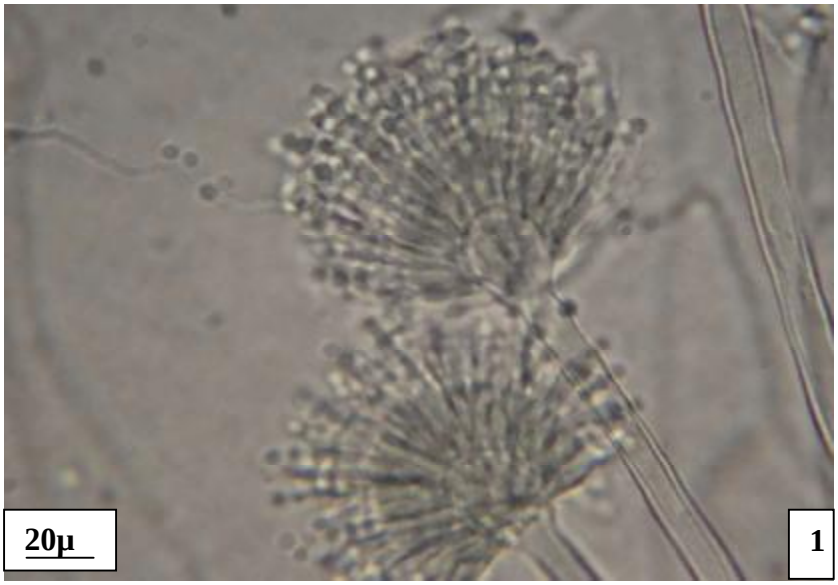
Also this species appear very similar to *S. fimicola* and *S. micropertusa*, however *S.quadrangularis* distinguished from these two species by its reticulate ascospores (Garica *et al*., 2004)

Tetracoccosprium paxianum Szabo, Nova Hedwigia 44:76-77,1950 Figs.(13-14).

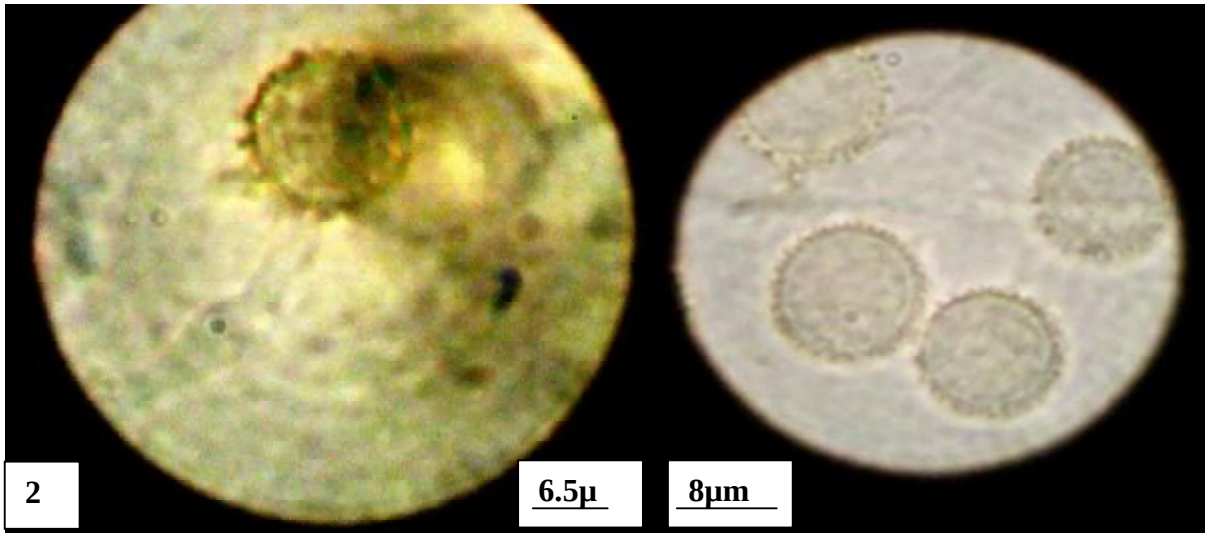
Colonies growing rapidly on MEA and PCA at 25C° reaching 7cm in 9days, olivaceous black, reverse black, mycelium superficial, conidiophres semi-macro nematous and branched at right angles to the main axis hyaline or pale olive, smooth 3.9-5.3 µm wide, conidiogenous cell monoblastic ampulliform or lageniform, conidia solitary, spherical or sub-spherical, dark brown or olivaceous brown minutely echinulate and divided cruciately by septa at right-angles to one another 13.3-16.6 × 10.6-14.6 µm.

Specimen examined: isolated from sediment sample collected from Shatt Al-Arab river opposite to Najibia, dried culture (BSRA11070).

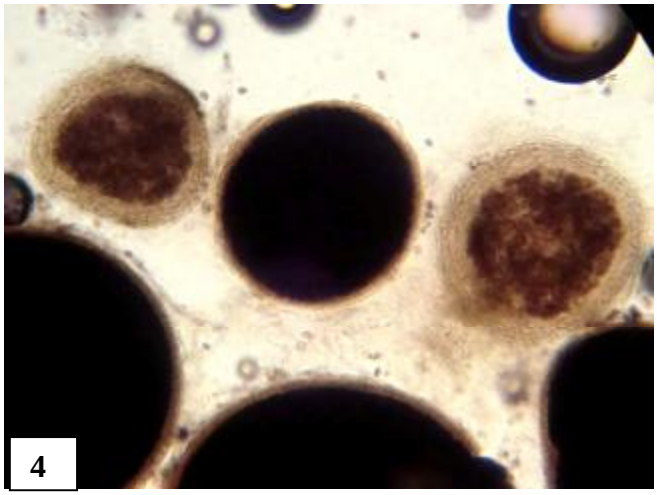
This genus is recorded for the first time in Iraq, and previously isolated from dung and soil in Europe and India, and its closely related to *Dictyoarthrinium sacchari*, but can distinguished from it by its ampulliform or lageniform conidiogenous cell which never produce in *Dictyoarthrinium sacchari* (Ellis, 1971).

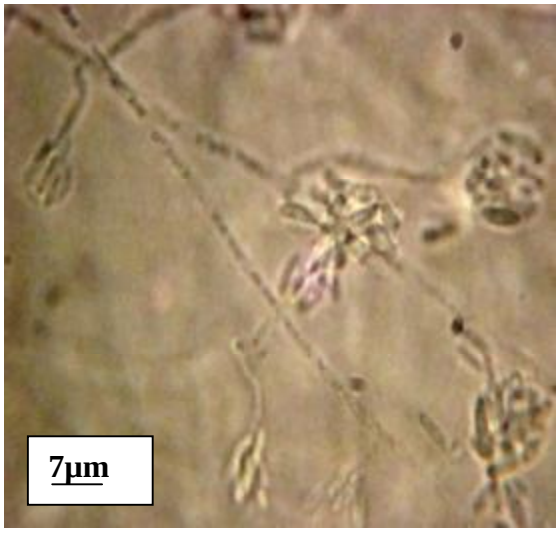


Figs.(1): Conidiophore and conidia of *Aspergillus campestris*

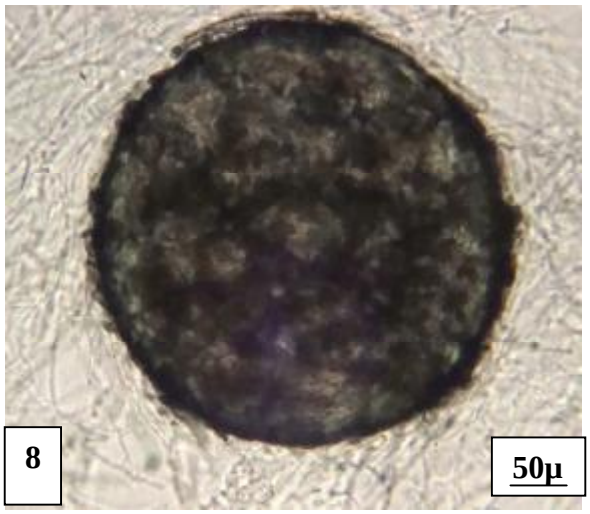


Figs.(2-3): *Myceliophthora* anamorph of *Corynascus sepedonium*
2. Conidiophore and conidia; 3. conidia

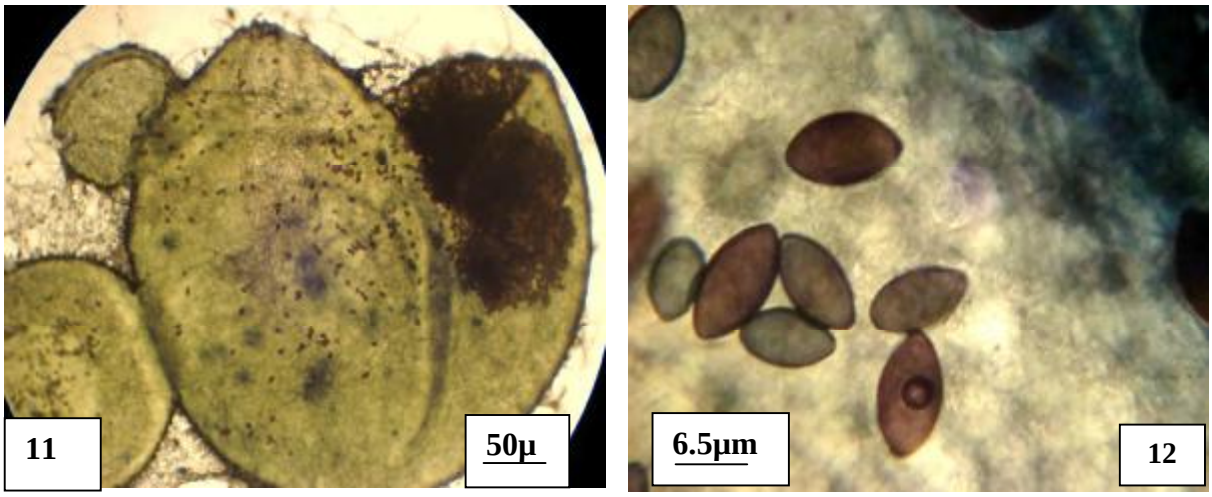




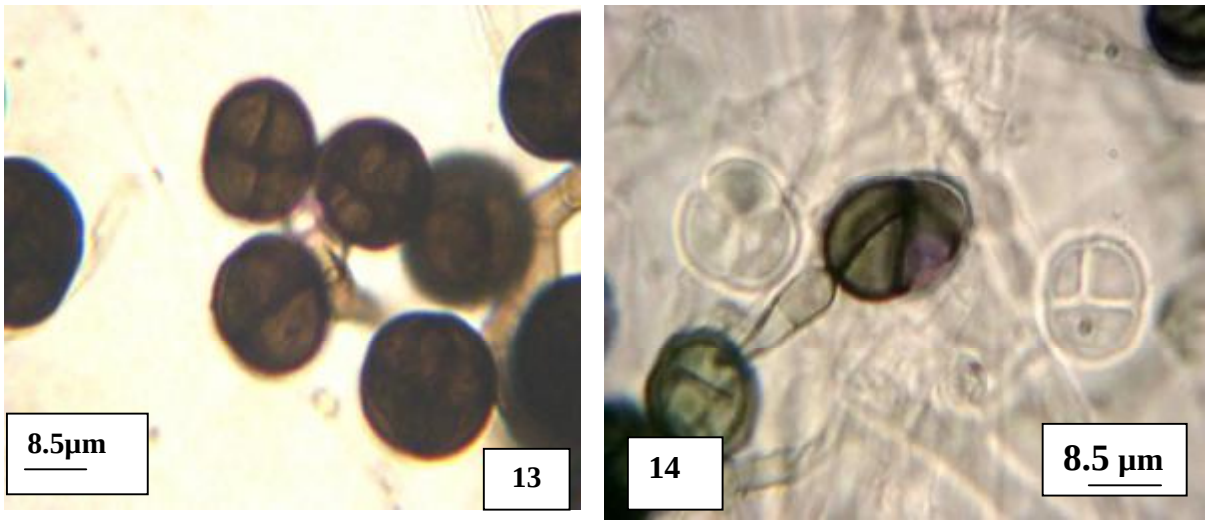
Figs.(4-7): *Emericellopsis glabra*
4.Ascomata; 5.Ascus
6.Ascospores; 7.Anamorph



Figs.(8-10): ***Rhexothecium globosum***
8.Ascomata ; 9.Ascus; 10.Ascospores



Figs.(11-12): ***Sphaerodes quadrangularis***
11.Ascomata; 12.Ascospores



Figs.(13-14): ***Tetracoccosprium paxianum***
13; 14. Conidiophore and conidia

5- References

Abdullah, S.K and Abbas, B.A. (1994a). Occurrence of thermophilic and Thermotolerant fungi in aquatic sediments of Satt Al- Arab river and Its creeks in Basrah, Marina Mesopotamica, 9:39-47.

Abdullah, S.K. and Abbas, B.A. (1994b). Taxonomic study on fungi from Water and surface sediments of Shatt Al- Arab river and its creeks I, Ascomycetes. Marina Mesopotamica, 9:91-100.

Abdullah, S.K. and Abbas, B.A. (1994c). *Sphaerodes iraquiensis* sp. nov. a new ascomycetes from surface sediment of Shatt Al- Arab river. Marina Mesopotamica, 9:205-208.

Abdullah, S.K. and Abbas, B.A. (1997). Taxonomic study on fungi from water and surface sediments of Shatt Al- Arab river and its creeks II, Hyphomycetes. J. Basrah Researches, 13,46-54.

Abdullah, S.K. , Al-Dossary, M.A. and Al- Saad, H.T. (2000). A mycofloral study on aquatic sediments of Shatt Al- Arab estuary and north west Arabian gulf. Barah. J.sice., 18:1-14.

Abdullah,S.K., Al-Saadoon, A.H.and Al-Salihy, M.H.(2007). Fungi from the tidal zone of Khawr Al-Zubair canal, southern Iraq. Marsh Bulletin 2:18-31.

Abdullah, S.K. and Hassan, B.A. (1995). Isolation of dermatophytes and other keratinophilic fungi from surface sediments of the Shatt Al- Arab river and Its creeks at Basrah. Iraq mycoses, 38:163-166.

Al- Dossary, M.A. (2004). New record of fungi for Iraq. Marina Mesopotamica, 19:69-76.

Arx, J.A. von (1974). The genera of fungi sporulating in pure culture. 2 nd ed. J carmer. Vaduz.

Arx, J. A. Von; Figueras, M. J. and Guarro, J. (1988). Sordariaceous ascomycetes without ascospore ejaculation. Nova Hedwigia. J.Cramer Berlin. 101pp.

Backus, M.P. and Orput , P.A. (1961). A new *Emericellopsis* from Wisconsin, with notes on other species. Mycologia 53:64-83.

Bourt, S.Y. and Johnson, T.W. (1962). Some biological observation on fungi In estuarine sediment, Mycologia, 54:181-193.

Cannon, P.F.; Abdullah, S.K. and Abbas, B.A. (1995). Two new species of *Monascus* from Iraq, with a key to known species of the genus. Mycol.Res. 99:659-662.

Christensen, M. (1982). The *Aspergillus ochraceus* group: two new species from western soils and a synoptic key. Mycologia 74:210-225.

Ellis, M. B. (1971). Dematiaceous hyphomycetes. Common. Mycol. Inst. England. 608pp.

Ellis, M. B. (1976). More dematiaceous hyphomycetes. Common. Mycol. Inst. England. 507pp.

Furuya, K. and Natio, A. (1979). An effective method for isolation of *Boothiella Tetraspora* from soil. Tran. Myco. Soc. Japan, 20:309-311.

Furuya, K and Natio, A. (1980). Stimulation of ascospore germination by phenolic compounds in members of sordariaceae.Trans. Mycol. Soc. Japan,21:77-85.

Garcia, D; Stchigel, A.M. and Guarro, J. (2004). Two new species of *Sphaerodes* from Spanish soil. Stud. Mycol.50:63-68.

Johnson, L.E.; Curl, E.A.; Bond, J.H. and Fribourgh, H.A. (1959). Methods for studying soil mycoflora - plant disease relationships. Burges Publ. Comp. Minnepolis.

Matsushima, T. (1975). Icones microfu-ngorum, a Matsushima lectorum. The Nipon print. Publ. Co. Japan. 415pp.

Raper, K. and Fennell, D.I. (1973).The genus *Aspergillus*. Sec.ed. Robert Krieger Publ. NewYourk 686pp.

Samson, R.A. and Mouchacca, J. (1975). Two new soil – borne cleistothecial ascomycetes, Can. J. Bot. 53:1634-1639.

Sivanesan, A.; Abdullah, S.K. and Abbas, B.A. (1993). *Exerohilum curvisporum* sp. nov. , a new hyphomycete from Iraq. Mycol. Res. 97:1486-1488.

Szaabo (1950). Cited by Ellis, M. B.(1971).Dematiaceous hyphomycetes. Common. Mycol. Inst. England, P. 81-82.

Van Oorschot, C. A. (1980). A revision of *Chrysosporium* and allied genera. Centraalbureau voor Schimmelucltures, Baarn. 85 pp.

Varga, J.; Frisvad, J.C. and Samson, R.A. (2007). Polyphasic taxonomy of *Aspergillus* section *candidi* based on molecular morphological and physiological data. Stud. Mycol. 59:75-88.

Zuccaro, A.; Summerbell, R.C.; Gams,W.; Schrores, H. and Mitchell, J.I. (2004). A new *Acremonium* species associated with *Fucus* spp., and its affinity with aphylogenetically distinct marine *Emericellopsis* clade. Stud. Mycol. 50: 283-297.

تسجيل أنواع جديدة من الفطريات من رواسب نهر شط العرب وتفرعاته

زينب فاضل منصور
قسم علوم الحياة، كلية العلوم، جامعة البصرة، العراق

الخلاصة

تم خلال هذه الدراسة التسجيل الأول ل(٦) أنواع من الفطريات من رواسب نهر شط العرب وتفرعاته ثلاثة وهي:- Hyphomycetes منها تعود للفطريات الناقصة *Aspergillus campestris* , *Myceliophthora anamorph of Corynascus sepedonium*, and *Tetracoccosporium paxianum* وهي :- Ascomycetes وثلاثة أنواع تعود للفطريات الكيسية *Emericellopsis glabra, Rhexothecium globosum* ,and *Sphaerodes quadrangularis.* وقد تم تشخيص جميع هذه الأنواع في المختبر وتم وصفها جميعا وحفظت منها عينات جافة في معشب جامعة البصرة.