Research Lab Sheet

Lab Name	Algae and Algal Toxins
Academic Year	2022

Basic Information	
Department	Botany and microbiology
Location	Sohag University
Total area (m^2)	

Lab Members				
No. of Prof.	No. of Ass. Prof.	No. of Lect.	No. of Ass. Lect. &Demonst.	No. of technicians
1	1	3	2	0

Staff members

#	Name	Scientific degree	e-mail	Specializations	C.V
1	Prof. Zakaria A. Mohamed	PhD	Zakaria.attia@science.sohag.edu.eg mzakaria_99@yahoo.com	Algal Toxins	Link of homepage
2	Ass. Prof.Zainab Ahmed Abdelfatah	PhD	zeinabahmed@science.sohag.edu.eg	Phycology	
3	Wafaa Saleh Mohamed Ali	PhD	Wafaa.ali@science.sohag.edu.eg	Phycology	
4	Asmaa Bakr Ahmed	PhD	Asmaabakr2011@science.sohag.edu.eg	Phycology	
5	Hoida Ali Badr Badr	PhD	hwaida.badr@science.sohag.edu.eg	Phycology	

Ass. Lecturers & Demonstrators

#	Name	Scientific degree	e-mail	Specializations	
1	Hanan Mohamed Ahmed Badawye	Bachelor	hanonmohamed1994@gmail.com		
2	Alshimaa Abdallah Abd Alrahem Hamouda	Bachelor	alshimaa.abdallah@science.sohag.edu.eg		

Articles produced by the Lab		
#	**Title**	**Journal information**
1	**The link between microcystin levels in groundwater and surface Nile water, and assessing their potential risk to human health**	Journal of Contaminant Hydrology, 2022, 244, 103921
2	**Fungal biodegradation and removal of cyanobacteria and microcystins: potential applications and research needs**	Environmental Science and Pollution Research, 2021, 28(28), pp. 37041–37050
3	**Impacts of microcystins on morphological and physiological parameters of agricultural plants: A review**	Plants, 2021, 10(4), 639
4	**Simultaneous biodegradation of harmful Cylindrospermopsisraciborskii and cylindrospermopsin toxin in batch culture by single Bacillus strain**	Environmental Science and Pollution Research, 202
5	**Growth inhibition of Microcystisaeruginosa and adsorption of microcystin toxin by the yeast Aureobasidiumpullulans, with no effect on microalgae**	Environmental Science and Pollution Research, 2020, 27(30), pp. 38038–38046
6	**Cyanotoxins and their environmental health risk in marine and freshwaters of Saudi Arabia**	Arabian Journal of Geosciences, 2020, 13(7), 285
7	**Detection of free and bound microcystins in tilapia fish from Egyptian fishpond farms and**	Journal fur Verbraucherschutz und Lebensmittelsicherheit, 2020, 15(1), pp. 37–47

	its related public health risk assessment	
8	**Growth inhibition of the toxic cyanobacteriumCylindrospermopsisraciborskii by extremely low-frequency electromagnetic fields**	ActaBotanicaCroatica, 2020, 79(2), pp. 193–200
9	**Cyanotoxins in Egypt and Saudi Arabia**	Encyclopedia of Environmental Health, 2019, pp. 796–804
10	**Assessment of phytoplankton species in gut and feces of cultured tilapia fish in egyptian fishponds: Implications for feeding and bloom control | Avaliação de espéciesfitoplanctônicas no intestino e nasfezes de tilápiacultivadaemviveiros no egito: Implicaçõespara a alimentação e controle da floração**	ActaLimnologicaBrasiliensia, 2019, 31, e27
11	**Concentrations of cylindrospermopsin toxin in water and tilapia fish of tropical fishponds in Egypt, and assessing their potential risk to human health**	Environmental Science and Pollution Research, 2018, 25(36), pp. 36287–36297
12	**Grazing of the copepod Cyclops vicinus on toxic Microcystisaeruginosa: Potential for controlling cyanobacterial blooms and transfer of toxins**	Oceanological and Hydrobiological Studies, 2018, 47(3), pp. 296–302
13	**Potentially harmful microalgae and algal blooms in the Red Sea: Current knowledge and research needs**	Marine Environmental Research, 2018, 140, pp. 234–24
14	**Bioavailability of bound microcystins in mice**	Toxicon, 2018, 151, pp. 34–36

	orally fed with contaminated tilapia edible tissues: Implications to human health	
15	**Macrophytes-cyanobacteria allelopathic interactions and their implications for water resources management—A review**	Limnologica, 2017, 63, pp. 122–132
16	**Cyanobacterial toxins in water sources and their impacts on human health** .	Pharmaceutical Sciences: Breakthroughs in Research and Practice, 2016, 2, pp. 1428–1456
17	**Harmful cyanobacteria and their cyanotoxins in Egyptian fresh waters–state of knowledge and research needs**	African Journal of Aquatic Science, 2016, 41(4), pp. 361–368
18	**Occurrence of toxic cyanobacteria and microcystin toxin in domestic water storage reservoirs, Egypt**	Journal of Water Supply: Research and Technology - AQUA, 2016, 65(5), pp. 431–440
19	**Breakthrough of oscillatorialimnetica and microcystin toxins into drinking water treatment plants - Examples from the nile river, Egypt**	Water SA, 2016, 42(1), pp. 161–165
20	**Occurrence of cyanobacteria and microcystin toxins in raw and treated waters of the Nile River, Egypt: implication for water treatment and human health**	Environmental Science and Pollution Research, 2015, 22(15), pp. 11716–11727
21	**Biodiversity and toxin production of cyanobacteria in mangrove swamps in the Red Sea off the southern coast of Saudi Arabia**	Botanica Marina, 2015, 58(1), pp. 23–34
22	**Growth inhibition of the cyanobacteriumMicrocystisaeruginosa and degradation of its microcystin toxins by the fungus Trichodermacitrinoviride**	Toxicon, 2014, 86, pp. 51–58

23	**Selective inhibition of toxic cyanobacteria by β-carboline-containing bacterium Bacillus flexus isolated from Saudi freshwaters**	Saudi Journal of Biological Sciences, 2013, 20(4), pp. 357–363
24	**Grazing on Microcystisaeruginosa and degradation of microcystins by the heterotrophic flagellate Diphylleiarotans**	Ecotoxicology and Environmental Safety, 2013, 96, pp. 48–52
25	**Allelopathic activity of the norharmane-producing cyanobacteriumSynechocystisaquatilis against cyanobacteria and microalgae**	Oceanological and Hydrobiological Studies, 2013, 42(1), pp. 1–7
26	**Assessment of cylindrospermopsin toxin in an arid Saudi lake containing dense cyanobacterial bloom**	Environmental Monitoring and Assessment, 2013, 185(3), pp. 2157–2166
27	**Toxic effect of norharmane on a freshwater plankton community**	Ecohydrology and Hydrobiology, 2013, 13(3), pp. 226–232
28	**Biodegradation of cylindrospermopsin toxin by microcystin-degrading bacteria isolated from cyanobacterial blooms**	Toxicon, 2012, 60(8), pp. 1390–1395
29	**The link between shrimp farm runoff and blooms of toxic Heterosigmaakashiwo in Red Sea coastal waters**	Oceanologia, 2012, 54(2), pp. 287–309
30	**Occurrence and germination of dinoflagellate cysts in surface sediments from the Red Sea off the coasts of Saudi Arabia**	Oceanologia, 2011, 53(1), pp. 121–136

31	Differential responses of epiphytic and planktonic toxic cyanobacteria to allelopathic substances of the submerged macrophytestratiotesaloides	International Review of Hydrobiology, 2010, 95(3), pp. 224–234
32	Microcystin production in epiphytic cyanobacteria on submerged macrophytes	Toxicon, 2010, 55(7), pp. 1346–1352
33	Microcystins in groundwater wells and their accumulation in vegetable plants irrigated with contaminated waters in Saudi Arabia	Journal of Hazardous Materials, 2009, 172(1), pp. 310–315
34	Microcystin-producing blooms of Anabaenopsisarnoldi in a potable mountain lake in Saudi Arabia: Research article	FEMS Microbiology Ecology, 2009, 69(1), pp. 98–105
35	Polysaccharides as a protective response against microcystin-induced oxidative stress in Chlorella vulgaris and Scenedesmusquadricauda and their possible significance in the aquatic ecosystem	Ecotoxicology, 2008, 17(6), pp. 504–516
36	Toxic cyanobacteria and cyanotoxins in public hot springs in Saudi Arabia	Toxicon, 2008, 51(1), pp. 17–27
37	First report on Noctilucascintillans blooms in the Red Sea off the coasts of Saudi Arabia: Consequences of eutrophication	Oceanologia, 2007, 49(3), pp. 337–351
38	Cyanobacteria and their toxins in treated-water storage reservoirs in Abha city, Saudi Arabia	Toxicon, 2007, 50(1), pp. 75–84

39	**Microcystin concentrations in the Nile River sediments and removal of microcystin-LR by sediments during batch experiments**	Archives of Environmental Contamination and Toxicology, 2007, 52(4), pp. 489–495
40	**First report of toxic Cylindrospermopsisraciborskii and Raphidiopsismediterranea (Cyanoprokaryota) in Egyptian fresh waters**	FEMS Microbiology Ecology, 2007, 59(3), pp. 749–761
41	**Microcystin production in benthic mats of cyanobacteria in the Nile River and irrigation canals, Egypt**	Toxicon, 2006, 47(5), pp. 584–590
42	**Depuration of microcystins in tilapia fish exposed to natural populations of toxic cyanobacteria: A laboratory study**	Ecotoxicology and Environmental Safety, 2006, 63(3), pp. 424–429
43	**Estimation of microcystins in the freshwater fish Oreochromisniloticus in an Egyptian fish farm containing a Microcystis bloom**	Environmental Toxicology, 2003, 18(2), pp. 137–141
44	**Allelopathic activity of Spirogyra sp.: Stimulating bloom formation and toxin production by Oscillatoriaagardhii in some irrigation canals, Egypt**	Journal of Plankton Research, 2002, 24(2), pp. 137–141
45	**Alum and lime-alum removal of toxic and nontoxic phytoplankton from the Nile river water: Laboratory study**	Water Resources Management, 2001, 15(4), pp. 213–221
46	**Accumulation of cyanobacterialhepatotoxins by Daphnia in some Egyptian irrigation canals**	Ecotoxicology and Environmental Safety, 2001, 50(1), pp. 4–8

47	**Removal of cadmium and manganese by a non-toxic strain of the freshwater cyanobacteriumGloeothece magna**	Water Research, 2001, 35(18), pp. 4405–4409
48	**Isolation and characterization of microcystins from a River Nile strain of OscillatoriatenuisAgardh ex Gomont**	Toxicon, 2000, 38(12), pp. 1759–1771
49	**Seasonal variation in microcystin levels of river Nile water at Sohag City, Egypt**	Annales de Limnologie, 2000, 36(4), pp. 227–234
50	**Activated carbon removal efficiency of microcystins in an aqueous cell extract of Microcystisaerugrinosa and Oscillatoriatenuis strains isolated from Egyptian freshwaters**	Environmental Toxicology, 1999, 14(1), pp. 197–201
51	**Growth, photosynthesis and some related metabolites as suitable selection criteria for the copper tolerance of Ankistrodesmusfalcatus.**	JES, 8:31-39

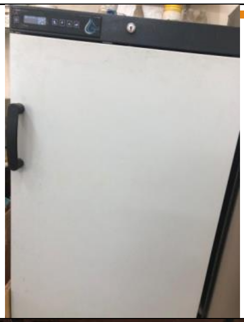
Thesis produced by the Lab			
M ScThesis			
#	**Degree**	**Title**	**Approval date**
1	Master	Ecological studies on the algal flora of Egyptian soils at Sohag district	
2		Seasonal variation of toxic cyanobacteria and their toxins in the Nile river and irrigation canals in Sohag province	October, 2004
3	Master	Ecological and Physiological studies on some Algal Flora Isolated from Sewage water in Sohag Governorate”	January , 2010
4		Physiological response to heavy metals in some algae isolated from the soil in Sohag province	October, 2010
5	Master	Ecological and Physiological Studies on Algal Flora of El-Dare Wastewater Treatment Plant at Sohag District.	May, 2012
6		Study the Effect of Extremely low Frequency Electromagnetic waves on Growth and Metabolic Activities of Harmful Cyanobacteria	March, 2018
Ph.D. Thesis			
	Ph.D	Algal flora, cyanotoxins and potential health hazards in fish farms in Sohag province.	Julay,2016

Lab instruments

#	Device	quantity	Quality			
			Good	Poor	Need maintenance	malfunction
1	Refrigerator	1			√	
2	Light incubator	1	√			
3	Spectrophotometer	1			√	
4	Oxygen meter	1	√			
	PH meter	1			√	
	Oven	1	√			
	Centrifuge	1	√			
	ELISA Reader	1	√			
	Autoclave	1	√			
	Microscope with camera	1	√			
	Conductivity meter	1			√	
	Electric balance	1	√			
	Vortex	1	√			
	Heater	1	√			
	Flame spectrophotometer	1				√
	Sucssion air pumb	1			√	
	Heater	1			√	
	Inverted microscope	1				

Instruments Description

Device image	Description /use
	**(ELISA Reader)** **ELISA stands for enzyme linked immunosorbent assay, it is an antibody test or a test for immune response to things attacking the body such as virus, bacteria and allergens. The test is done in an ELISA plate, also known as a 96-well plate or microplate. The ELISA reader reads the plate.**
	**(A centrifuge)** **It is a device that uses centrifugal force to separate various components of a fluid. This is achieved by spinning the fluid at high speed within a container, thereby separating fluids of different densities (e.g. liquids from solids). It works by causing denser substances and particles to move outward in the radial direction. At the same time, objects that are less dense are displaced and move to the centre. A centrifuge can be a very effective filter that separates contaminants from the main body of fluid.**
	**(Microscope with a digital camera)** **Microscope digital cameras allow you to** view a live image from your microscope directly onto an LCD projector or a computer**. This useful tool allows us to share specimens through a computer screen without having to actually look down less and stare at the specimens for ourselves.**

	(Algal Incubator) It is a device used to grow and maintain algal cultures due to the ability to adjust both temperature and light.
	(An autoclave) It is used to perform sterilization of algal media
	(Electric oven) It is used for drying, heating, and to sterilize a large piece of equipment.
	(Vortex mixer) It is used for mixing laboratory samples in test tubes

	(The hot plate stirrer or hot plate magnetic stirrer) It is used for mixing and heating aqueous solutions for a great variety of chemical reactions such as synthesis.
	(Electric balance) It is used for precise measurement of chemicals which are used in various experiments. It provides digital result of measurement.

Evaluate the fulfillment of lab to appropriateness of areas, building installations, facilities and human resources standards

Areas of assessment		Indicators	Yes	Somewhat	No
Floor area and capacity	1	Adequacy of the total capacity of the lab for the number of researcher(1).		√	
Windows and doors	2	Availability of windows for adequate ventilations.		√	
	3	Ease of use of windows.		√	
	4	There are two exits (doors) at least (2).			√
	5	There are signs to locate directions of emergency exits			√
Equipment	6	Appropriate temperature during the lectures (3).		√	
	7	Availability of good ventilation (4).		√	
	8	The existence of adequate lighting (4).		√	
	9	Lab is connected to the Internet			√
	10	The existence of directions inside the Lab showing entrances and emergency exits.			√
Security and Safety	11	Existence of firefighting equipment near the hall (5).	√		
	12	Cleanliness of the room.		√	