

Antifungal Activity of Iraqi *Atriplex nummularia* Extraction

Yamama Khalid abdulmueed¹ Enas Jwad kadium² Dr.Abbas Abdulmueed mustafa³

Iraq-Faculty of Pharmacy , Uruk University ,Department of pharmacognosy and medical plants.¹
IraqCollege of pharmacy, University of Baghdad , Department of pharmacognosy and medical plants.²
Iraq/Faculty of Pharmacy , Uruk University ,Department of Medical Microbiology.³

Abstract

Atriplex nummularia , a plant belong to the family Chenopodiaceae . It is characterized by a particularly wide spectrum of different plant constituents. Many compounds have been isolated and identified from the plant. These included coumarins, flavonoids, steroid , phthalic acid , saponine, and tannins .In this study , extracted this iraqi plant and studied in terms of its ability to act as an antifungal agent.

Keywords: *atraplix* ; Antifungal .

INTRODUCTION :

Old man saltbush (*Atriplex nummularia* Lindl.), is a halophyte species and one of the most important forage shrubs suited to alkaline and saline lowlands .(1)

Atriplex nummularia Lindl. occurs spontaneously in areas and can be cultivated .Plants of the *Atriplex* genus are perennial . (2)

Atriplex nummularia was evaluated for its secondary metabolite contents and its anti-bacterial activity. eleven compounds were isolated from this plant Total extract and different plant fractions were screened for their anti bacterial activity. phytosterol like Beta sitosterol glucoside and Stigmasterol glucoside , flavenoid like quercetin glycoside , rutin (3) kaempferol glycoside (4) and apignin glycoside (5), Saponins (triterpenoid saponins).(6)(7), Coumarins and trace amont of Tannins.

Coumarins are the major constituent of *Atraplix nummularia* .

Pharmacological activity of plant :

Antihyperglycemic (8). Antihyperlipidemic (9), Antioxidant effect(10) , antimicrobacterial activity(11) , and antifungal activity(12) .

During this research the efficacy of this plant as anti-fungal activity.

Plant material :

The aerial parts of *Atriplex nummularia* were collected from area in Baghdad, The plant was identified and authenticated by Prof. Dr. Ibraheem Saleh /Department of pharmacognosy /College of pharmacy / Al-Mustansiriya University . they were dried in shade for several days at room temperature and then grinded as powder.

Extraction of plant :

Powdered plant aerial part (1000g) was extracted by Soxhlet apparatus with methanol (70%) , 1000 mL till exhaustion. The extract was concentrated by evaporation under vacuum.

MATERIAL & METHOD :

The study was carried out in the laboratory of Dr. Abbas Abdulmueed Clinical Lab in Baghdad .

Anti fungal plate method Gradient plate technique used (13)

Measurements of toxicity

The percentage of toxicity of each antifungal agent at concentration designated was calculated as follows :

$$\% \text{ toxicity} = \frac{a-b}{a} \times 100$$

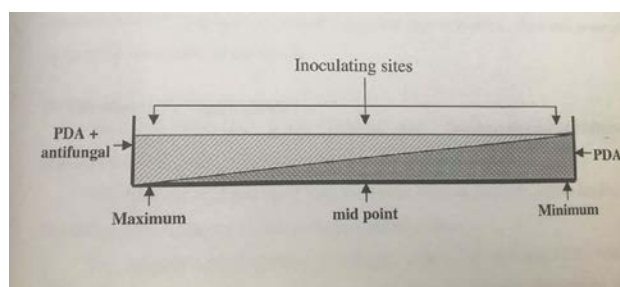
A= colony size of un treated fungus (control) .

B = colony size of the treated fungus .

Treated fungi in the equation were definid as the growth of fungi in the presence of an antifungal at given concentration .

The crud extraction preperd as three concentration : 20% , 40% and 60% .

The fungal used in this study are *aspergillus niger* , *Aspergillus fumigatus*, *Aspergillus terreus* and *Aspergillus flavus*.



Fig(1.1):Gradient plate technique.

RESULT & DISCUSSION:

Gradient plate technique :in this study the total numbers of fungi isolated from laboratory of Dr. Abbas Abdulmueed Clinical Lab.when these fungi were exposed to my antifungal agent at different concentration using the gradient plate technique as well as tube dilution method

Table (1.1): Effect of different concentration of plant extract after incubation on fungal growth , measured in mm of the diameter of colony.

Fungus	Concentration of antifugal used verses the size of funagal colony						Control mm
	20%mm	Toxicity%	40%mm	Toxicity%	60%mm	Toxicity%	
A. Niger	2	83.3	0	100	0	100	12
A.flavus	5	37.5	3	62.5	0	100	8
A.fumigatu	1	88.8	0	100	0	100	9
A.terreus	3	66.7	1	88.9	0	100	9
*candida. ssp.	+		0		0		+

*+=normal growth.

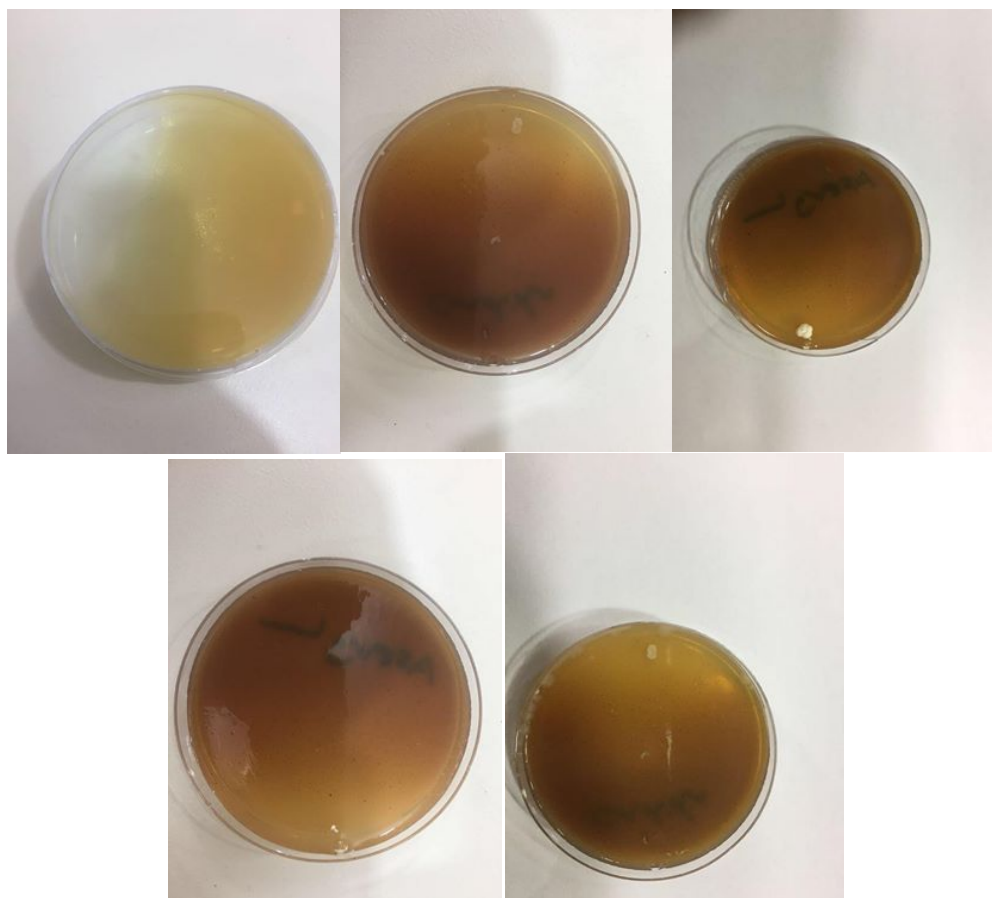


Fig (1.2):the Gradient plate result .

The first technique had the following advantages:

- 1- It was easy to prepared .
- 2- The diameter of colonies appeared could be easily measured.
- 3- The effect of different concentration of same antifungi could be seen in the same plate
- 4- Low cost .

The data showed that crud extract 40% concentration had a marked fungicidal effect on most tested fungi under investigation as shown in table (1.1).

These results are attributed to the presence of active substances within this plant have the ability to be active anti-fungus, which we are saying that this Iraqi plant is classified within the medicinal plants that can be used to treat some of the fungal diseases in the future.

REFERENCE

1. Feedipedia S. Feedipedia. 2016;
2. de Souza ER, dos Santos Freire MBG, de Melo DVM, de Assunção Montenegro AA. Management of Atriplex Nummularia Lindl. in a Salt Affected Soil in a Semi Arid Region of Brazil. Int J Phytoremediation. 2014;16(1):73–85.
3. Abd D, Raheim EL, Abd D, Raheim E. Issn : 2277 – 4998 Nummularia Extracts. 2013;2(6):1260–9.
4. Awaad AS, Maitland DJ, Donia AERM, Alqasoumi SI, Soliman GA. Novel flavonoids with antioxidant activity from a Chenopodiaceae plant. Pharm Biol. 2012;50(1):99–104.
5. GENETIC EVALUATION OF SOME RANGE PLANTS USED AS USED AS FODDERS IN THE NORTH WESTERN Department of Genetics Faculty of Agriculture -Ain Sham University. 2016;(September 2005).
6. Fayed AM, Essawy ME-, Eid EY, Helal HG, Abdou R, Shaer HM El. Utilization of Alfalfa and Atriplex for Feeding Sheep under Saline Conditions of South Sinai , Egypt. 2010;6(12).
7. Azeana Z. Chapter 2 2. General Chemical Aspects of Alkaloids.

- 2010;13-47.
8. Babbar N. An introduction to alkaloids and their applications in pharmaceutical chemistry. 2015;4(10):74-5.
 9. Chikhi I, Allali H, El Amine Dib M, Medjdoub H, Tabti B. Antidiabetic activity of aqueous leaf extract of *Atriplex halimus* L. (Chenopodiaceae) in streptozotocin-induced diabetic rats. *Asian Pacific J Trop Dis*. 2014;4(3):181-4.
 10. Soliman GA, Abd El Raheim M. Antihyperglycemic, Antihyperlipidemic and Antioxidant effect of *Atriplex farinosa* and *Atriplex nummularia* in Streptozotocin-induced Diabetes in rats. *Bull Env Pharmacol Life Sci*. 2015;4(12):10-8.
 11. Tahar SB, Hadj-Mahammed M, Yousfi M. Study of the antioxidant activity of phenolic extracts of *A. halimus* L and *Haloxylon scoparium* Pomel northern Sahara. *J Chem Pharm Res*. 2015;7(11):258-64.
 12. Isolated G, Atriplex F, Herb L, El-aasr M, Kabbash A, El-seoud KAA, et al. Antimicrobial and Immunomodulatory Activities of Flavonol. 2016;8(10):1159-68.
 13. fungi and Associated Bacteria Isolated from infected Ear in Al-Yarmouk Teaching Hospital by dr.Abbas A,M.Alani M.B.ch.B. November 2000.