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RESEARCH ARTICLE

Study the Effect of the Alcoholic and Water Extracts of Ammi Visnaga and Matrica Chamomila on Different Bacteria which Isolate from Diarrhea

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Abstract

This study was designed to explore the effect of the ethanolic and water extract of Ammi Visnaga and Matircara Chamomila on E.coli, Psuedomonas, Shigella, Salmonella and compylobacter. (75) fecal samples were collected from patients suffering from diarrhea, from both sex and average age (3months- 11years) admitted to the hospital Central Teaching Hospital of Pediatrics in Baghdad. Microorganisms were planted on muller Hinton agar. Plant extract was applied using a steers replicator and petri dishes were incubated at (37°C) for (24 hours). The result of bacterial isolates revealed the following bacterial strain, E.coli, Salmonella spp, Pseudomonas spp, Shigella spp and Compylobacter spp. The antibacterial activities were determined by measuring the diameter of the zone in mm. The result showed that high growth inhibition zones were seen with Matricaria Chamomilla on Pseudomonas followed by salmonella while high growth inhibition zones were seen with Ammi Visnaga on E.coli followed by Pseudomonas.

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Introduction

The major cause of morbidity and mortality in the pediatric population of developing countries is diarrhea [1]. Diarrhea in children in developing countries has been reported in 50% to 60% of diagnosed cases. [2]. [3] reported that *E.coli* play an important role in the etiology of acute diarrhea, also [4] found that the main causes of diarrhea in adults and children is *E.coli*. The main problem of public health throughout the world are multiple antibiotic bacterial resistance to most commonly using antibiotics that associated with the presence of plasmids, plasmid contain one or more resistance genes, these genes can transmit the antibiotic resistance from highly virulent bacterial species to non-pathogenic organisms such as intestinal tract micro flora [5]. Plasmids have acquired of interns that can carry one or more genes for resistance to multiple drugs [6]. Once resistance develops in non-pathogen, it can be transferred to pathogenic organisms [7]. However, the development of antibiotic resistance does not directly occur post-using the drugs but it results due to selective pressure that allows bacteria resistant to antibiotic to flourish [8], however, there is an increase in the prevalence of drug resistance among *E coli* isolates, and conjugal transfer of plasmids has greatly contributed to the rapid spread of antibiotic resistance among *E.coli* isolates [9]. [10] explained that multi-drug resistant pathogen such as *E.coli* are widely distributed and increasing being isolated from community, therefore it is needed to find out new antimicrobial agents, and increasing attempts to use herbal extracts as new drugs against multi- antibiotic resistance pathogen [11]. [12] found that spice plants and essential oils extracted from them have potential antimicrobial activity. Antimicrobial effectiveness of spices depends on the kind of spice, its composition and concentration, type and concentrations of the target microorganism, substrate composition, food processing and storage conditions [13]. [14] reported that spices (garlic and ginger) have antibacterial activity against enteric pathogens. Essential oil extract from the chamomile flowers has been shown to possess antimicrobial activity, [15]. The object of the present study was to investigate, in vitro, the influence of Ammi Visnaga and Matricaria Chamomila extract on growth inhibition of certain bacteria as comparing with commonly using antibiotic agents.

Materials and methods

Sample collection:

(75) fecal samples were collected from patients suffering from diarrhea, from both sex and average age (3months-11years) admitted to the hospital Central Teaching Hospital of Pediatrics. All samples were inoculated on Nutrient broth. Pure culture of bacterial isolates were identified and confirmed diagnosis by morphological features and biochemical tests according to [16].

Media used for bacterial isolation include blood agar, Nutrient agar, Macconky agar, Eosin methylene blue (E.M.B), Salmonella Shigella Agar (S.S) agar and Xylose lysine deoxycholate agar (XLD), and the biochemical properties were tested depending on the method of [17] bio-chemical is (Sulfur Indole Motility Test (SIM), Triple Sugar Iron (TSI), Simmon Citrate Test (SC), Urease and methyl red -Voges -Proskauer Test (MR/VP). Preparation of ethanolic and water plant of Ammi Visnaga and Matricaria Chamomila Plants were blended in an electrical blender (sharp,japan) until obtained final powder , weight (150 gm) of plant in flask and added (450 ml) of alcohol solution (70%) Ethanol, put the flask in freezer (-20c) for (9) days after that put it in on a magnetic stirrer for 20 minuts, filter the extract by gauze then filter paper (240mm) in size then put in oven 37c for 3days to preparation of dose concentration as table (1).

Results and discussion

The result showed that bacterial isolates (60%) found in 75 fecal samples. The current study showed that Shigella (22%) was the commonest bacterial isolates followed by E.coli (15%), Campylobacter (13%), salmonella (8%) and Pseudomonas (7%). Some samples expressed mixed bacterial isolates and other showed pure single bacterial colonies. [18] recorded that 105 (61.76%) out 170 pediatric diarrheal samples were E.coli strains positive isolated and about 90% of E. Coli strains were resistant to a large number of antimicrobial agents, and they found all isolated strains were resistant to ampicillin, imipenem and cotrimoxazole but they were sensitive to amikacin. and they found pseudomonas, salmonella and E.coli isolated strains were resistant to (CX) and RA, and sensitive to (AZM) but the campylobacter sensitive to (TMP) and resistant to (SXT), (RA), (CX) and pseudomonas resistant to (CX) , (RA), (CRO), (AM) and sensitive to(AZM) and salmonella resistant to (DO), (AM) and sensitive to (AZM) Shigella sensitive to(AZM) and resistant to (CX), (RA), (AM), (CRO). Rifampin (RA) Trimethoprim (TMP) Ceftriaxone (CRO) Azithromycin (AZM) Doxycycline (DO) Eerthromycin (ER) Ampicilline (AM) Sulfatmethoxazole (SXT) Cloxacillin(CX) and as the table 2

Table -1-

Volume of solvent ml (distilled water & ethanol)	Weight of dried extracts	Concentration of extract
10	0.5	50%
10	1	100%
10	1.5	150%
10	2	200%

Table 2:

Bacteria	C X	D O	AZM	TMP	E R	R A	SXT	A M	CRO
pseudomonas	R	5	32	5	20	R	R	R	R
salmonella	2	R	15	5	13	5	3	R	12
E.coli	R	9	28	R	10	R	23	R	R
campylobacter	R	6	3	20	4	1	R	R	6
Shigella	R	6	15	5	5	R	6	R	R

The result showed that high growth inhibition zones were seen with Matricaria Chamomilla on pseudomonas followed by salmonella while high growth inhibition zones were seen with Ammi Visnaga on E.coli followed by Pseudomonas. (Table: 3). these results may be indicated the Ammi visnaga extract act a good antibacterial agent

these ideas were inconsistent with Khalafallah et al., (2011) who found that the essential oil of Ammi visnaga L. Exhibited the best antibacterial activity against E.coli, Pseudomonas aeruginosa and Klebsiella pneumonia strains. Table : 4 revealed the alcoholic extract at a concentration (10) did not exhibit any inhibit bacterial growth , while wide zone of bacterial growth inhibition was recorded in the alcoholic extract at (60) concentration. The present study showed that alcoholic extracts of Ammi Visnaga expressed high inhibition zone against E.coli followed by Pseudomonas, these results may be indicated this plant extract may be act as antimicrobial agents used as antimicrobial agents. The antimicrobial activity of plant extracts may be due to tannins, saponins, phenolic compounds , essential oils and flavonoids [19] . Also [20] reported that Allicin, the active ingredient of Allium sativum, acts by partially inhibiting DNA and protein synthesis and also totally inhibiting RNA synthesis as a primary target. It was reported that the diameter of inhibition zone induced by this plant against pseudomonas is larger than those induced by antibiotic drugs ,these result may be indicated that this plant exhibit antibacterial activity against wide range of microbes including E.coli, Salmonella spp.,Pseudomonas spp,shigella and compylobacter, the action of these extract may be due to these contain which act as antibacterial agents, [21] predicated furanochromones and flavonoids from Ammi visnaga.

Table:3

Matricaria Chamomilla	10%		20%		40%		60%	
	Alcoholic	Watery	Alcoholic	Watery	Alcoholic	Watery	Alcoholic	Watery
E. Cole	13	15	15	18	18	21	19	22
Salmonella	20	13	24	15	30	18	31	21
Pseudomonas	11	13	15	14	18	20	20	22
Shigella	14	9	21	13	22	19	23	20
Compylobacter	9	11	12	13	15	14	17	15

Table:4

Ammi Visnaga	10%		20%		40%		60%	
	Alcoholic	Watery	Alcoholic	Watery	Alcoholic	Watery	Alcoholic	Watery
E. coli	11	8	18	13	25	20	29	22
Salmonella	9	10	13	15	19	22	21	24
Pseudomonas	11	10	15	13	24	22	25	23
Shigella	14	12	16	13	22	17	23	19
Compylobacter	12	10	17	15	20	18	22	20

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