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Antimicrobial Activity of Aerial Part Crude Extracts from the Saharan plant *Anabasis aretioides*

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Abstract. The antimicrobial activity of several crude extracts from the aerial parts of Anabasis aretioides was investigated by the disc diffusion method. The S. aureus, C. albicans and S. cereviceae Bacteria showed good efficiency in bacterial activity with most of the tested extract.

***Key Words*:** Antimicrobial activity, Anabasis aretioides, Medecinal plants, Sahara

Introduction

Anabasis aretioides a medicinal plant belongs to Chenopodiaceae family that comprises more than 400 species. The plant *A. aretioides* distributed over a vast area of the desert and especially in the south west Algeria [1-4]. Bedouins used as food for their livestock, especially when it is green. In Saharan ethnopharmacopae, the specie is used to treat a urinary tract infection, rheumatism, asthma and bronchitis [5, 6]. Due to the notable medicinal value of *Anabasis aretioides*, it was considered of interest to carry out a phytochemical and antimicrobial investigation of this specie, thus, the aerial parts of this plant were studied and the results leading to the antimicrobial screening are presented this communication.

Materias and methods

Plant materials and extraction.

Anabasis aretioides was collected in march 2014 from Boukais a locality about 50 km from Bechar city (Figure 1), specie is identified by Pr A. Maarouf (Naama University). A

voucher specimen is deposited in the herbarium of Phytochemistry and Organic Synthesis Laboratory (LPSO) of Bechar University under the number CA00/42.

Fig 1: The endemic Saharan medicinal plant: *Anabasis aretioides*

The milled, dried aerial parts was extracted exhaustively by using a soxhlet apparatus with several solvent (Water, Methanol, Heptane, Acetone, Dichlorometane, Diethyl ether,Chloroform) for 6 h at reflux.
The yields of extraction after evaporisation of solvents are indicated below:
Water (10%), Methanol (.8.3%), Heptanes (7.2%), Acetone (4.5%), Dichloromethane (9%), Diethyl ether (5.4%), Chloroform (9.3%).

Activity Evaluation.
Used microorganisms.
Staphylococcus aureus (ATCC 6538), Enterococcus faecium (ATCC 6569), Bacillus subtilis ATCC 9372), Pseudomonas aeruginosa (ATCC 9027), Escherichia coli (ATCC 4157), Klebsiella pneumonia (ATCC 4352), Bordetella bronchiseptica (ATCC 4617), Candida albicans (ATCC 24433), Saccharomyces cereviceae (ATCC 2601) obtained from CRD – Saidal (El Harrach , Algeria)

Antimicrobial sensitivity test.
Antibacterial activity was evaluated by agar well diffusion method. Sterile 6.0 mm diameter blank disk were used to impregnate of several dilutions of the extracts. Extract impregnated discs were placed on agar and incubated either 37°C for 24 to 48h for bacteria or 25°C for 24h for fungus. Antibacterial activities were then measured indicated by the clear zones of inhibition. The results were compared with antibiotic drugs [6-9].

Results and discussion
We notice that the antibacterial activity is good in the case of *S. aureus* Bacteria including most of the tested extracts compared to *E.faecium* Bacteria which has an accepted efficiency

in the case of water and methanol extracts. The rest extracts show no activity since they are non sensitive. For the *B. subtilis* Bacteria, it has no activity for all the tested extracts.

Table 1. Antimicrobial activity of extracts from aerial parts of *Anabasis aretioides*

Diameter of Inhibition zone (mm)									
Microorganisms	**S.a**	**E.f**	**B.s**	**P.a**	**E.c**	**K.p**	**B.b**	**C.a**	**S. c**
ATCC	6538	6569	9372	9027	4157	4352	4617	24433	2601
Water	16	15	-	-	-	-	-	-	-
Methanol	15	15	-	-	-	-	-	-	-
Hepthane	19	-	-	-	-	10	-	20	12
Acetone	22	-	-	-	-	-	-	44	19
Dichloromethane	18	-	-	-	-	7	-	15	10
Diethyl Ether	15	-	-	-	-	5	-	34	24
Chloroform	17	-	-	-	-	18	-	-	-

***S.a**: Staphylococcus aureus, **E.f**: Enterococcus faecium, **B.s**: Bacillus subtilis, **P.a** : Pseudomonas aeruginos, **E.c**: Escherichia coli, **K.p**: Klebsiella pneumoniae, **B.b**: Bordetella bronchiseptica, **C.a:** Candida albicans , **S.c:** Saccharomyces cereviceae.*

Concerning the tested Gram negative Bacteria such as *P. aeruginosa, E.coli* and *B. bronchiseptica*, it has no efficiency with all the tested extracts. But for the *K .pneumoniae* the antibacterial activity is weak with Dichloromethane, Diethyl Ether extracts but good with Hepthane, Chloroformtested extracts.
In the case of *C. albicans* and *S. cereviceae* the antifungal activity is good with the tested extracts: Acetone, Diethyl Ether, Heptane and Dichloromethane. But with the tested extracts Water, Methanol and Chloroform the activity was not observed (Table 1).

Conclusion.

The extracts from the Saharan medicinal plant *Anabasis aretioides* showed good antimicrobial activities against *S. aureus, C. albicans* and *S. cereviceae* . However the rest of bacteria were non sensitive.

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