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## Evaluation of Antibacterial Activity of the Species: *Tetraclinis articulata* (Cupressaceae)

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### ABSTRACT

The present work concerns the biological evaluation of the species *Tetraclinis articulata* of Cupressaceae family, after the extraction of the aerial parts of this plant ; we did anti bacterial activity of it n-butanol Extract using three Strains of Bacteria : two Gram-negative ; *Escherichia coli* 25922 ATTC and *Proteus mirabilis* 4738 ATTC and one Gram-positive *Staphylococcus aureus* 25923 ATTC . Our results showed that n-butanolic extract gives a strongest anti bacterial activity against *Staphylococcus aureus* 25923 ATTC (Gram +).

**Keys words:** *Tetraclinis articulata* , Cupressaceae, n-butanol Extract , anti bacterial activity.

### INTRODUCTION

*Tetraclinis articulata* (Thuya of Barbary), endemic to North Africa, covering approximately 1 million hectares in the three countries of the Maghreb (Algérie, Morocco and Tunisia) [1].

In Algérie, it occupies an estimated area of 160 000 ha, here listed predominantly in the western region of the country . Almost all stand takes the form thickets this is one of the few conifers able to reject on strain, the density stands varies between 1000 and 8000 trees/ha. Their age ranges from 10 to 60 years. [2].

In Morocco, this species individualizes the broadest and most diverse populations. Its area distribution extends roughly in the eastern part of the country, on the central plateau, and in the argan sector [3]. The plastic temperament and strength of cedar him possible to colonise all types of substrates geological and to occupy an altitudinal range of the fringe water front and 1000 m in northern Morocco [4]. This explains the great diversity ecosystems organized by conifers. Indeed 16 associations have been recognized up now [5]. One is frankly sylvatic. She is bioclimatesubhumid less developed in Morocco [6].

The species *Tetraclinis articulata* is a tree or evergreen shrub (height: 6-8 m), the outer suburbs, with greyish brown bark. nested sheets of 4 lines, scale-like. Quadrangular fruiting cones (diameter 10-12 mm), solitary and terminal, brown with 4 woody scales mucroné triangular with ailées.s seeds [7].

In Morocco, local people use this tree species in medicine traditional, to treat various types of diseases, including those of the cardio-vascular system [8]. Throughout Morocco, studies have been carried out on the traditional pharmacopoeia and medical practices in general [9]. Various parts of this tree are used for its multiple therapeutic effects, it is mainly used against childhood [10], respiratory and intestinal infections [11], gastric pains [12], diabetes, hypertension [13], antidiarrheal, antipyretic, diuretic, antirheumatic and oral hypoglycemic [14].

In this study, we did anti bacterial activity of it n-butanol Extract.

## MATERIALS AND METHODS

### 2-1 Plant material

The aerial parts of *Tetraclinis articulata* were collected from the drill Zakour, northeast of the capital of the wilaya of Mascara (western Algeria) at 800 m above sea level during june 2011, and identified by Dr Benameur BELGHARBI and Dr Kada RIGHI.

### 2-2 Preparation of extracts

The air-dried powdered parts (1000g) of *Tetraclinis articulata* were macerated three times in boiling methanolic solution (70%). The MeOH extract was concentrated to dryness, the residue was dissolved in boiling water (600ml) after filtration, the residue was extracted successively three times with DCM, AcOEt and n-butanol (3×200 ml) to give 1.100 ; 6.192 and 31.146 g of the respective residues. Solvents were evaporated and the residues of each extract were dissolved in small volumes of methanol.

### 2-3 Bacterial Strains

The organisms used in this study were two Gram-negative: *Escherichia coli* 25922 ATTC, *Proteus mirabilis* 4738 ATTC and one Gram-positive *Staphylococcus aureus* 25923 ATTC and, the organisms were obtained from Bacteriology Laboratory Constantine Hospital University (C.H.U). Algeria.

### 2-4 Anti-bacterial activity

The antibacterial activity was determined by the well diffusion method [15]. Wells of (6 mm diameter) were made in Mueller Hinton Agar. Plates were seeded with a 24h old culture of the bacterial strais. n-butanol extract is added to the wells at a concentration of 5 mg/ml. . The inoculated plates were incubated at 37 °c for 24 h. The diameter of the inhibition zones were measured for each bacteria and the average reading of the three replicates for each species are shown in table.

## RESULTS AND DISCUSSION

The results of the antibacterial screening (Table 1) revealed that the butanolic extract of *Tetraclinis articulata* possesses an activity against *Staphylococcus aureus* 25923 ATTC (Gram +) and *Escherichia coli* 25922 ATTC (Gram -) and not to *Proteus mirabilis* 4738 ATTC (Gram -).

**Table 1 : Antibacterial activity measured as a zone of inhibition (mm)**

Strains of bacteria	n-butanol extract
<i>Escherichia coli</i> 25922 ATTC (Gram -)	D (07mm, 16 mm)
<i>Proteus mirabilis</i> 4738ATTC(Gram -)	-
<i>Staphylococcus aureus</i> 25923ATTC (Gram +)	D (15 mm, 24 mm)

D : Diameter of inhibition.

## CONCLUSION

The results of the antibacterial screening (Table) revealed that the butanolic extract of *Tetraclinis articulata* possesses an activity against *Staphylococcus aureus* 25923 ATTC (Gram +) and *Escherichia coli* 25922 ATTC (Gram -).

Subsequent experiments using purified extracts are considered to precisely identify the compounds responsible for the anti bacterial activity and understand their mechanism of action.

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