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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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