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## Evaluation of the analgesic activity of the species: *Tetraclinis articulata* of Cupressaceae family

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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 analgesic biological test of its Extract : dichloro methane Extract, ethyl acétates Extract and n-butanol Extract using various in vivo models in mice. Our results showed that n-butanolic extract gives a strongest analgesic activity.

**Keys words :** *Tetraclinis articulata* , Cupressaceae, dichloro methane Extract, ethyl acétates Extract, n-butanol Extract , analgesic 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, where it is found 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 bioclimate subhumid 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].

Previous studies indicated its use as antibacterial and antifungal [15], cytotoxic [16], anti-oxidant and anti-inflammatory [17].

In this study, we did analgesic biological test of its Extract (dichloro methane Extract, ethyl acetates Extract and n-butanol Extract) of their aerial parts.

## 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 BELGHARBI Benameur and Dr RIGHI Kada.

### 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 Animals

The study used male and female albinos Swiss mice weighing 18-24 g, were supplied by the animal house of pharmacy department of Constantine (Algeria).

### 2-4 Analgesic activity

#### a) Methods

Experiments were performed on a pain model induced by acetic acid in mice fasted 15 hours before experimentation. The intraperitoneal injection of acetic acid 3% in mice causes a painful syndrome that is manifested by writhes characteristics with stretching of the hind legs and dorsoventral musculature. The number of stretching is recorded 20 minutes after injection of acetic acid [18]. The per gavage bone was done using a stomach tube and each group receives:

- witness Lot( control): physiological saline at 1 ml / 100g weight of the mice .
- Batch 1: CH<sub>2</sub>Cl<sub>2</sub> extract at a dose of 100 mg / kg *per os*.
- Batch 2: AcOEt extract at a dose of 100 mg / Kg *per os*.
- Batch 3: the n-butanol extract at a dose of 100 mg / Kg *per os*.
- Reference Lot: acetylsalicylic acid (aspirin) at the dose of 100 mg / Kg *per os*.

Two hours after feeding, 0.1 ml of an acetic acid solution of 3%, is injected intraperitoneally to mice and the number of writhing of each mice was counted over a period of 30 minutes. The percent of inhibition (PI) is Calculated by this formula:

$$PI = \frac{[\text{Number of writhes (control)} - \text{Number of writhes (test)}]}{\text{Number of writhes (control)}}$$

Mean writhing in the treated groups were compared to the witness group (control group) with the Scheffe test [18], n = 6 is the number of mice in each group.

## RESULTS

The control group receiving the physiological saline present, after intraperitoneal injection of 3% acetic acid, an average of 125 writhing over a period of 30 minutes.

Oral administration of acide acétylsalicylique (aspirin) at a dose of 100 mg / kg, significantly prevents the onset of contortions related to the administration of acetic acid 34,0 (table).

Oral administration of the CH<sub>2</sub>Cl<sub>2</sub> extract prevents dose-dependent manner, the occurrence of writhing in mice. With 100 mg / kg of the extract, the observed contortions are significantly different from those observed with the control group (85 vs 125) (table).

Oral administration AcOEt extract prevents dose-dependent manner, the occurrence of writhing in mice. With 100 mg / kg of the extract, the observed contortions are significantly different from those observed with the control group (57 vs 125) (table).

Oral administration of n-butanol extract prevents dose-dependent manner, the occurrence of writhing in mice. With 100 mg / kg of the extract, the observed contortions are significantly different from those observed with the control group (42 vs 125 (table).

Treatment	Number of writhes	Percent of inhibition
Lot witness	125	-
Reference Lot	34	72,8
Extract 1	85	32,0
Extract 2	57	54,4
<b>Extract 3</b>	<b>42</b>	<b>66,4</b>

Extract 1 :  $\text{CH}_2\text{Cl}_2$  extract, Extract 2: AcOEt extract, Extract 3: n-butanol extract

### CONCLUSION

**n-butanol extract** of the species *Tetraclinis articulata* has an important analgesic properties (with a percentage of inhibition equal to **66,4 %**) that justify its traditional use. These properties are probably related to the presence of flavonoids and saponins.

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

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