Study of some properties and antibacterial activity of (Alhagi maurorum Medik) collected from the desert of Al – Najaf

Meison Abdulbarry

Department of Pharmacognosy and Medicinal Plant / Faculty of Pharmacy /University of Kufa , Republic of Iraq.

Email : maysoona.abdullah@uokufa.edu.iq

Abstract. In traditional medicine , Alhagi maurorum is one member of medicinal plants which is used for many diseases therapy, that it is used as diuretic and Kidney stones treatments. This study was founded to identify some morphological characters and antibacterial activity of methanolic extract of A. maurorum. The morphological properties studied with macro and microscopical examination while the antibacterial activity by screening with well diffusion method against Bacillus cereus and Proteus mirabilis. The results showed that the plant is shrubby herb with evergreen appearance and its leaves are small obovate shape and the polygonal epidermal cells covered with thick cuticle layer. Stomata are frequently Paracytic type in addition to a few anomocytic type with unicellular covering trichome and prismatic crystals. The plant did not showed antibacterial activity against studied bacteria ( Bacillus cereus and Proteus mirabilis ) with concentrations up to 200 mg / ml.

Keyword: Alhagi maurorum, microscopical examination, antibacterial.

1. Introduction:

Many plants which are grow in the deserts have many useful activity as food sources in addition to using as treatment for many diseases. The new trend in medicinal botany is to take advantage of plants that grow in desert or remote or distant places that are often used in traditional therapy. In traditional medicine , Alhagi maurorum is one member of medicinal plants which is used for many diseases therapy, that it is used as diuretic and many other ailments(1). Alhagi maurorum is belong to Leguminosae family and have many active constituents as flavonoid glycosides (2) tannins , alkaloids , steroids , terpenoids and resins(3). It is a perennial plant found in many regions in the world as in Africa , Europe and Asia which is distributed in Middle East especially in an arid area in Iraq and Saudi Arabia and called ( Agool ) and ( Camel thorn ) (4). It is commonly used as a water extract for kidney stones treatments by expanding the ureter(5). Many studies have looked at plant activity and revealed that the plant has an antioxidant and ant inflammation effect(6) and recently it confirm as antinociceptive and antidiarrhoeal activity(7). This study came to know more about Alhagi maurorum plant and to know some of its properties and its effectiveness against some types of bacteria.
2. Materials and methods:

**Plant material:**

The whole plant of *Alhagi maurorum* was collected from the desert of Al–Najaf Badia and the samples were identified in the Department of Pharmacognosy and Medicinal Plant / Faculty of Pharmacy /University of Kufa. The plant was studied by macroscopical examination. Some of plant samples used for microscopical examination and the other samples were air–dried and milling to make it fine powder which it then used for antibacterial studies.

**The microscopical examination:**

A portion of the whole leaf was taken from a fixed position (middle of the leaf), and used the method of scrapping or off Stripping to get the Upper and lower epiderm, using an autopsy blade and forceps, then transfer the prepared tissues to a Petri Dish. In Petri dish contains water to remove the remaining material and residue of the lingering tissue then transferred to a clean glass slide and covered with a cover slide ready for examination and study (8).

**Extraction:**

Soxhlet was used to extract plant samples by adding 250 ml of solvent (methanol 95% ) to 25 gm of plant powder for 24 hours , filtration, concentration and dried then stored in refrigerator until used (9).

**Samples of bacteria:**

The bacterial samples (*Bacillus cereus* and *Proteus mirabilis*) were obtained and identified in Department of Biology / Faculty of Sciences /University of Kufa.

**Screening for Antibacterial Activity:**

It was carried out according to well diffusion method (10) which the filter papers were soaked in the plants extracts with concentration ( 200 mg/ml ) , then allowed to dry beneath the laminar flow cabinet for 24 hours. In the aid of sterile forceps, the plant solutions discs were put on the inoculated plate into agar. The control discs were soaked with DMSO which provide a negative control. The inoculated plates were incubated at 37°C for 18 - 24 h. By the measurement of the zone inhibition width in the region neighboring to discs with millimeters ( mm) , the antimicrobial effects was construed.

**Results and discussion:**

The macroscopical examination to *Alhagi maurorum* plant revealed that the plant is shrubby herb with evergreen branched appearance , woody root , the stem ( 55 – 98 ) cm is erect and its leaves are small obovate shape. Its flowers are pink to red or purple colored while the fruit is brown cylindrical kidney shape.( image 1) In other side the microscopical examination showed that the polygonal epidermal cells covered with thick cuticle layer. Stomata are frequently Paracytic type in addition to a few anomocytic type with unicellular covering trichome and prismatic crystals. ( image 2,3 and 4).
The whole plant (*Alhagi maurorum*)

The polygonal epidermal cells

The Paracytic stomatal type

The unicellular covering trichome

These results were agreed with (11 and 12) and which improve the characters of leguminosae family.

The screening for antibacterial activity in the *Alhagi maurorum* methanolic plant extract against *Bacillus cereus* and *Proteus mirabilis* showed negative results that the extract didn’t inhibit the bacterial growth in this concentration and this may be expound as the plant extract not affect these bacteria especially because of their resistance means or because the dose is not effective (13 and 14).

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