

# Antimicrobial Activities of Guiera Senegalensis Leaves Extract

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**Abstract:** A deepening of understanding the plants extracts mechanisms and pathways of antimicrobial activities have been the basic requirements for the development of so called traditional medicine. *Guiera senegalensis* (family of *combretaceae*) leave used in various ways for medicinal purpose, in Sudan, Senegal, Gambia, Mali, Niger, Burkina Faso and Nigeria traditional healers use leave of *G. senegalensis* to treat several diseases . The present study aimed to determine antimicrobial activity of *G. senegalensis* leaves extract against six microbial isolates (*Staphylococcus epidermidis*, *Staphylococcus epidermidis*, *Salmonella para typhi B*, *Shigella dysenteriae*, *Klebsiella pneumonia* and *Escherichia coli*), the result showed that the highest activity against *Staphylococcus epidermidis* and *Staphylococcus epidermidis* (6mm) where's there medium activity against *Salmonella para typhi B* and *Shigella dysenteriae* (5mm) while *Klebsiella pneumonia* and *Escherichia coli* showed the lowest activity (4mm). This study shows that the use of *G. senegalensis* leaves as traditional medicine has a potential effect in treatment of microbial infections with further standardization.

## Introduction

Massive scientific investigations and, clinical experiments have shown up the importance of plants in the treatment the diseases. Most developing countries, especially in Africa, depend on traditional medicines for different health needs as a result of their availability [1]. It is estimated that More than 80% of world population refer to traditional healers seeking traditional therapeutic prescriptions [2]. Infectious diseases are the world's major threat to humans and account for almost 50,000 deaths every day and the rapid development of the multidrug resistance microorganisms to available antimicrobial treatments make the situation more complicated [3].

*Guiera senegalensis* widely known as “Ghubaysh” in Sudan and as “Sabara” in Hausa communities is a shrub with whitish dusty – looking leaves, it belongs to a family of *combretaceae* found abundantly in dried regions with little rainfall. The leaves, the stems and the roots of *Guiera senegalensis* are used in various ways for medicinal purpose [3]. In Nigeria, Senegal, Gambia, Mali, Niger and Burkina Faso *guiera senegalensis* is widely distributed [4]. *Guiera senegalensis* (Gs) has been used as a medicinal plant in Sudan since an ancient time mainly in Western Sudan Kordufan and Darfur it is also utilized all along the country, It is considered by the locals to be one of the most important medicinal plant ,in western Sudan a very large land yard were named Ghubaysh where the plant grow naturally and intensively [5]. The plant contains abundant phenolic and flavonoidal compounds and is often used in the region to treat diarrhea, fever and also to increase milk production in lactating women [1]. Therefore, the current work is an attempt to determine the antimicrobial activities of leave extracts of *guiera senegalensis*.

## Material and methods

### Sample collection

The leaves of *Guiera senegalensis* were collected from Eastern Darfur state, Sudan

### Sample preparation

The collected leaves were washed thoroughly by tape water and dried under the sun light for completely a week, grinded by the aid of mechanical grinder and sieved to obtain the powder.

### Sample extraction

Sixty gram (60g) of powdered leave of *G. senegalensis* was weighted and mix with 90 ml of neutral PH water the mixture was kept for 5hr at room temperature, and then used to test its antimicrobial activity.

## Antibacterial activity testing using Agar well diffusion assay

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Five Gram positive and gram negative bacterial study strain suspension of the isolates were prepared against McFarland standard and aseptically was swabbed into plate of Muller Hinton agar, then The plates corked by sterilized blue tips(upper end) add 150 micro litter (3 drops) incubated in an upright position at 37°C for 24 hours. The diameter of inhibition zones was measured in mm and the results were recorded.

## Result

Table below showing the antimicrobial sensitivity of *G.senegalensis* leaves extract against isolated organisms, result show that *Staphylococcus epidermidis* and *Staphylococcus aureus* were the highest sensitive to the plant leave (6mm), where's the *Klebsiella pneumonia* and *Escherichia coli* were have low sensitivity against the plant leave (4mm).

**Table: sensitivity test of 6 isolated organism**

Microorganism	Zone of inhibition in mm
<i>Shigella dysenteriae</i>	5mm
<i>Staphylococcus epidermidis</i>	6mm
<i>Salmonella para typhi B</i>	5mm
<i>Klebsiella pneumonia</i>	4mm
<i>Staphylococcus epidermidis</i>	6mm
<i>Escherichia coli</i>	4mm

## Discussion

The finding of the current study shows highly antimicrobial activity against *Staphylococcus epidermidis*, *Staphylococcus epidermidis*, *Salmonella para typhi B*, *Shigella dysenteriae*, *Klebsiella pneumonia* and *Escherichia coli*, antimicrobial activity of the extract on the isolated organisms showed inhibitions zone (6mm) with *Staphylococcus epidermidis* and *Staphylococcus aureus*, and with *Shigella dysenteriae* and *Salmonella para typhi B* the inhibitions zone was (5mm) while its inhibitions zone with *Klebsiella pneumoniae* and *Escherichia coli* was (4mm). which is similar result to study conducted in Nigeria in which *G.senegalensis* leave extract showed antibacterial properties against *Escherichia coli*, *Staphylococcus aureus* and *Klebsiella pneumonia*[6], moreover in another study in sudan this leave extract resulted in strong antimicrobial activity against *S. aureus*, *P. aeruginosa* but no activity against *E. coli* [7]. On the other hand in study conducted in nigeria *G. senigalensis* leave extract showed activity against *S. aureus*, *K. pneumonia* and *P. aeruginosa* but no activity observed against citrobacter specie, *E. coli*, and *P. vulgaris* [8].

## Conclusion

The result of the study show that the leave of *G.senegalensis* showed effective antimicrobial activities against pathogenic bacteria *Staphylococcus epidermidis*, *Staphylococcus epidermidis*, *Salmonella para typhi B*, *Shigella dysenteriae*, *Klebsiella pneumonia* and *Escherichia coli*. Therefore this extract could be used as substrate for the manufacture of antibacterial drugs after thorough investigation and purification.

## References

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