

In Vitro Antibacterial Activity of the Extracts of *Lactuca Taraxaxifolia* L from Nigeria

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-----ABSTRACT-----

*Evaluation of the medicinal relevance of the leaves of *Lactuca taraxaxifolia* L against some microbial strains using standard method analyses. The leaves of *Lactuca taraxaxifolia* L was air dried and extracted using four different solvents, Chloroform, Hexane, Ethyl Acetate, and Methanol. The extracts were screened for antibacterial activities using disc diffusion method; the effectiveness of the extracts was then tested on *Bacillus cereus*, *Pseudomonas aeruginosa* and *Staphylococcus aureus*. Erythromycin and Gentamycin as standard control drugs. The results obtained from the extract shows that methanol extract display more inhibition on the micro organisms.*

Keyword: *Lactuca taraxaxifolia* L, Antibacterial

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I. INTRODUCTION

Lactuca taraxaxifolia L is a Perennial herb up to 150 cm tall, with creeping root system, basal rosette of leaves and erect stem of 1.3m high from a woody rhizome. It was observed that *Lactuca taraxaxifolia* L requires minimum input for its growth especially under direct sunlight. (Ayodele, 2005). The Ethiopian highlands have been suggested as the place of origin, from where it was introduced elsewhere and spread as a weed. *Lactuca taraxaxifolia* L has been domesticated as a leafy vegetable in Nigeria, and is also cultivated locally in Senegal and Benin. The leaves of *Lactuca taraxaxifolia* L are eaten fresh as a salad or cooked in soups or sauces. Amongst the Yoruba people in Nigeria soup made from the leaves are, called 'efo yanrin' is popular. Wild *Lactuca taraxaxifolia* L has hard leaves that are very bitter, whereas leaves of cultivated types are tender and less bitter. Chemical analysis of *Lactuca taraxaxifolia* L showed that it contains small quantities of mineral elements like iron (Fe), calcium (Ca),magnesium(Mg), Phosphorus(P), that function in major metabolic process of the human cells in man. The phosphorus contained in *Lactuca taraxaxifolia* L is reported to be of considerably higher values than that present in other vegetables (Fasuyi, 2006). *Lactuca taraxaxifolia* L has a very high water content with very few calories; they are considered to be a good dietary source of mineral, Carbohydrate and protein (Mosh, 1995) . The leaves of *Lactuca taraxaxifolia* L are fed lactating cows in northern part Nigeria to increase the milk yield and to sheep's and goats mixed with natron to produce multiple births (Burkill, 1985). *Lactuca taraxaxifolia* L is given to livestock to induce multiple births. A leaf extract mixed with breast-milk of a nursing mother is administered medicinally to cure partial blindness resulting from snake spit. In Benin it is used as a febrifuge. The leaves are rubbed on the limbs of backward children in Nigeria and Ghana to induce them to walk. (Ayensu, 1978).The milky latex produced by the plant could also be used to cure eye disease known as conjunctivitis otherwise known as Apollo (Adegbite, 1987). Consumption of *Lactuca taraxaxifolia* L could to a large extent prevent infections such as high blood pressure, or reduce the effect of infections in the body (Obi, 2006). In test with animals in Ghana *Lactuca taraxaxifolia* L showed a cholesterol lowering effect. (Adebisi, 2000) but in Nigeria the plant is sometimes burnt for its ashes, which are used as vegetable salt.

II. MATERIAL AND METHOD

Plant collection: The leaves of *Lactuca taraxaxifolia* L was collected in July 2012 from a dry farmland in Agbara, Ogun state Nigeria. The plant was authenticated at the herbarium of the Department of botany, university of Lagos, Nigeria with voucher specimen number LUH 5005.

Plant extraction: The leaves of *Lactuca taraxaxifolia L* were air dried for two (2) days, after which it was grinded. The grinded material was hermetically sealed in plastic for use. The plant sample (20.0 g) was subjected to cold extraction. The sample was measured into four (4) different sample bottles using solvent as medium of extraction. The samples were later decanted using a filter paper to get the extracts. The laboratory experiment was conducted in the Department of Chemistry, Lagos state University, Ojo. Lagos, Nigeria.

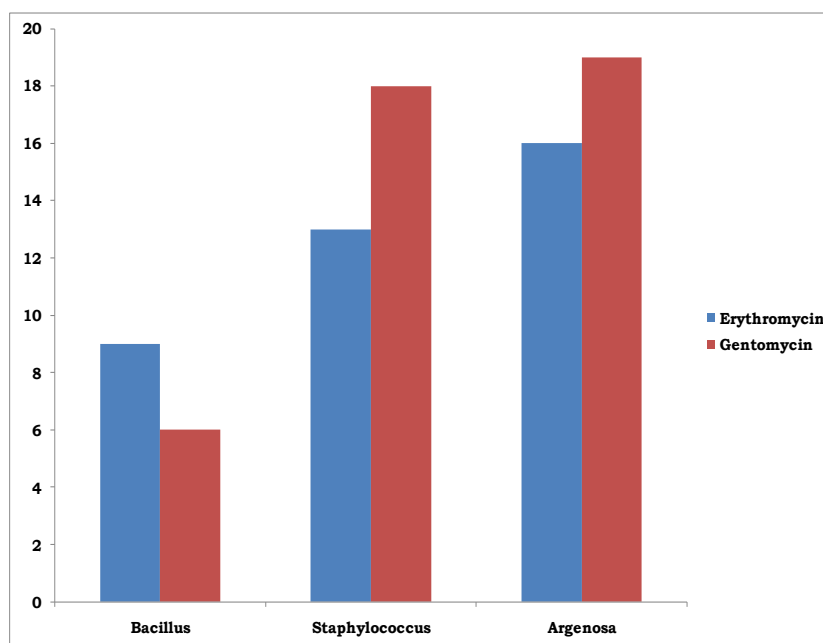
Determination of the antibacterial Constituent

Bacterial susceptibility testing

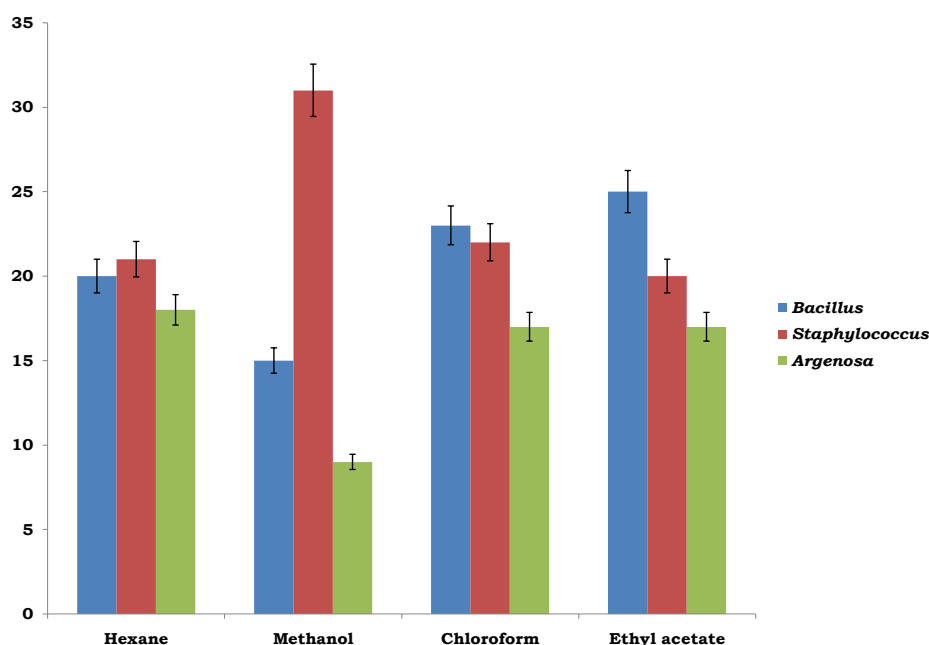
Agar Diffusion test

This was carried out in the microbiology department of the Lagos state university ojo Lagos Nigeria. The extract was subjected to antibacterial activities using the Agar disc diffusion method .Disk diffusion assay was conducted according to Alderman and smith (2001). The surface of an agar plate was inoculated with a bacterial suspension on Muller-Hinton agar. Sterile 6mm paper filters disks were soaked in 22 microlitre of the aqueous plant extract in triplicate and paper disc embedded with sterile water was used as the negative control, placed on the inoculated agar plate, and incubated at 37o C for 24 hrs. Zones of inhibition produced after incubation was measured in millimeters. Results are the average of the three measurements. . Two drugs were used as control, Erythromycin and Gentamycin. In each plate, the extract was added with the bacteria and control

RESULTS ANTIMICROBIAL SUSCEPTIBILITY TESTING



Bar chart showing the effect of control on micro organisms



Bar chart showing inhibitory values of the extract with the micro organisms

III. DISCUSSION

The highest inhibitory activity of 30.0 was obtained from the methanol extract of *Lactuca taraxaxifolia L* leaf which was tested on *Bacillus*, *Staphylococcus*, and *Argenosa*. It inhibited the growth of *Staphylococcus* sp. The extract has a broad spectrum activity against tested bacteria and the two control drugs. According to the graph, it illustrates the analysis of the plant extract; hence, it is recommendable for the treatment *Staphylococcus aureus*, *Bacillus* than other micro organism. To evaluate the chemical composition of *Lactuca taraxaxifolia L* leaves.

IV. CONCLUSION

The extract of *Lactuca taraxaxifolia L* has proven to be a vital tool in the fight against harmful micro organisms and it has also proven through the antibiotics sensitivity test to be very effective. The antimicrobial activities as demonstrated by the extracts of *Lactuca taraxaxifolia L* support the scientific basis for the use of *Lactuca taraxaxifolia L*. Furthermore, the finding in this work has justified the use of this plant in ethno medicinal treatment of certain illnesses and ailments which are caused by micro-organisms

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