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Short Report

Effect Of The Aqueous Extract Of *Harungana madagascarensis* On The Growth Of *Staphylococcus aureus*.

ED. NWOBODO

Department of Physiology, Nnmadi Azikiwe University Medical School, Nnewi, Nigeria.

There is a need to continuously scientifically evaluate and document the ethno medical uses and efficacy of the plant resources of Nigeria. This will be required to identify and develop candidate drugs and to justify or otherwise, the continued administration of such plant extracts to human patients by local traditional doctors. The ethno medical uses of *Harungana madagascarensis* Lam (Family Hypericacea) reportedly varies from antifertility to antimicrobial activities [1, 2]. Extractives of this plant have continued to be administered to human patients by local traditional doctors [3]. Its high folkloric reputation appears to justify the wide spread scientific evaluation and reports of the use of various extractives of this plant. These include their use in the treatment of wounds and scabies and for various 'fevers' [3,4]. It also, reportedly has an interesting anti-malarial activity [5], and a high folkloric and proven potent anti-fertility activity [6,7]. The phytochemical analysis of the plant show the presence of glycoside, tanin, anthraquinones, saponin, fats and oils among others [3,7]. It is uncertain if the reported wound healing activities of the root was due to direct effects on microbial organisms or due to an anti-inflammatory action. The rate of wound healing and the quality of the scar derive from both antimicrobial and anti-inflammatory actions. In this study, we directly challenged *S. aureus* with different concentrations of the water extract of *H. madagascarensis*.

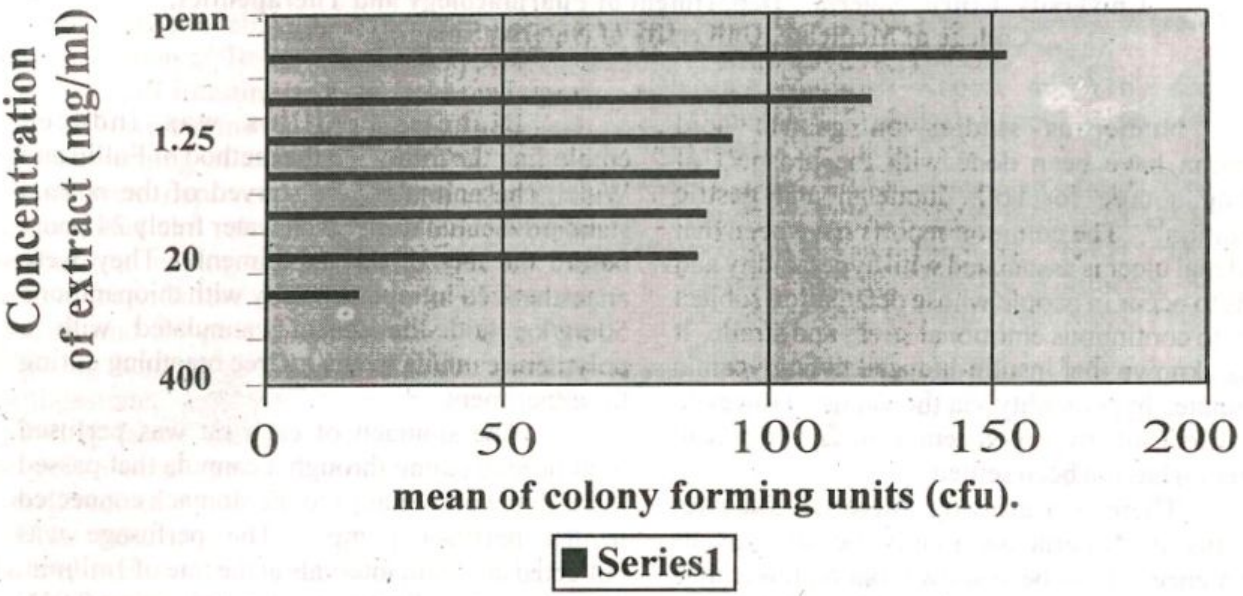
Plant collection, Identification and extraction: The roots of *H. madagascarcensis* were collected from the wild and authenticated in the herbarium of the University of Nigeria where voucher specimens have been deposited. The roots were sun-drived and ground. The powder was macerated in distilled water for 12h and filtered through Whatman 4 filter paper. The decoction was concentrated in *vacuo* using a rota vapour. A yield of 2% w/v was obtained. From this stock, different concentrations of the extract were obtained by dissolving weighed amounts in distilled water. The concentrations ranged from 0.625 to 400 mg/ml with water as the vehicle. Pure culture of penicillin-sentitive *S. aureus* was obtained from the Pathology Department of Dartmouth Medical School, N.H. The organism was then plated on prepared agar plates using spreaders. The plates had been pretreated with different doses of the extract. The cultures were then incubated at 37% with 5% CO_2 for 24h. All treatments were made in triplicates.

Counting of colony forming units: At the end of the 24th culture, different treatment groups were examined by counting all colony forming units (cfu) for the triplicates. The mean cfu were obtained for the all the treatment groups. The penicillin-streptomycin group which was pretreated with 1ml (IU) of the antibiotic served as the control and baseline for comparison of the relative effectiveness of the extract.

The results show a fairly dose-dependent suppression of the growth of S. aureus with a complete (100%) inhibition of growth of the microorganism at high doses of 200 and 400 mg/ml. These two concentrations compare with the efficacy of 1ml (IU) of penicillin-streptomycin. This result shows that the extract albeit crude, has a promising anti microbial activity. The results are summarized in figure 1. It is expected that further purification of the crude extract would produce better inhibition of growth at relatively lower doses of the extract.

The results of the study indicate a promising antimicrobial activity by the water extract

Fig. 1: Effect of concn of extract on cfu of S. aureus



of *H.madagascariensis*. The use of such extracts in wound healing may just drive from its antimicrobial activity. In this study, only a species of microbial organism was used. The reported wound healing property of the essential oil derivative of *Borreria varticillate* has been shown to be based on its antimicrobial action exemplified by its potent action *on S. aureus*[8] . It is yet uncertain which of the identified phytochemical agent is responsible for the observed activity. It is also known that varied extractives of this plant show strong anti-plasmodial activity (Cordell GA personal communication) which partly explains its folkloric use in the treatment of malaria. A crude extractive which is effective at only 200mg/ml means that purified and fractionated doses of the active ingredients can give a promising antimicrobial action.

The future directions of this preliminary study would consist in the identification of the active fractions/ingredients of this extract which has the observed antimicrobial activity.

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REFERENCE:

1. Nwobodo EO and Ezeigbo JC and Nwodo OFC (1991). Antifertility profile *H. madagascariensis*. Orient J. Med. **3**(4) 200-4

2. Madubanyi Obi C, Nwabue NI and Chime AB (1995). Antimicrobial activity of *H. madagascariensis* leaf extracts. Int J. Pharmacog. **33**(2) 12934

3. Watt J and Breyer Brandwijk M (1962). The Medicinal and poisonous plants of Southern and Eastern African. E & S livinstone ltd.,. London.

4. Ethnomedical information on *H.madagascariensis*. Napralet (3 part query).

5. Personal. Communication. University of Illinois, Chicago, USA, 1995.

6. Traditional Dr. (Mrs.) Eluka. Pres. Communication, Enugu, Nigeria. 1987.

7. Akah PA (1994). Abortifacient Activity of some Nigerian Medicinal Plants. Phytotherapy Research. **8**:106-108.

8. Akinloye BA and Adegberan JO (1984). Essential oils of Nigeria Eucalpha spp. Nig, J. Pharmacy. 15(1):11-14.