

LETTER-TO-THE-EDITOR

Microbial Contamination of Herbal Preparations in Lagos, Nigeria

Sir,

Traditional herbalists in Nigeria use various herbal preparations to treat various types of ailments, including diarrhoea, cough, 'neonatal fistula', convulsions, skin diseases, etc. (1). Most of these preparations are used in the form of concoctions (soup or drink made usually from ingredients after boiling) or infusions (soaking the plant material and allowing it to stand for varying lengths of time) (2).

Medicinal plant materials normally carry a large number of microbes originating from the soil. Microorganisms of various kinds are normally adhered to leaves, stem, flowers, seeds, and roots. Additional contaminants may also be introduced during harvesting, handling, and production of various herbal remedies since no conscious efforts are made to decontaminate the herbs other than by washing them.

In this study, we investigated the bacterial and fungal quality of herbal concoctions prepared locally for the treatment of malaria, fistula, convulsions, and skin rashes. The following concoctions were obtained from herbalists operating in Lagos metropolis:

- a. 'Agbo iba' for treatment of malaria: contains *Hippocratea indica*, *Nauclea latifolia*, *Enantia* sp., *Citrus medica* var *acida*, and the bark of *Mangifera indica*.
- b. 'Agbo jedijedi' for treatment of fistula: contains *Tetrapleura tetraptera*, *Ancistrophyllum secundiflorum*, *Eugenia caryophyllus*, and *Parinari* sp.
- c. 'Agbo giri' for treatment of convulsions in children: consists of *Ocimum gratissimum* and black alum.

- d. 'Agbo narun' for treatment of skin rashes: consists of *Lophira alata*, *Ceiba pentandra*, and *Pergularia daemia*.

The above concoctions were serially diluted and plated on nutrient agar and potato dextrose agar plates in triplicate and were incubated at room temperature (30 °C) for 24 and 96 hours, respectively, to allow for bacterial and fungal growth. Thereafter, colonies were counted and isolates were sub-cultured on fresh agar plates for purity. The ensuing pure cultures were identified using standard methods (3).

The following bacteria were isolated from the concoctions in populations varying from 2.6×10^2 to 2.5×10^3 cfu per mL: *Escherichia coli*, *Klebsiella pneumoniae*, *Proteus vulgaris*, *P. rettgeri*, *Enterobacter aerogenes*, *Citrobacter freundii*, *Bacillus subtilis*, *B. coagulans*, *B. cereus*, *Corynebacterium* sp., *Micrococcus varians*, *M. luteus*, *Staphylococcus aureus*, and *Erwinia* sp. Antimicrobial susceptibility screening of the pathogenic strains indicated multiple resistance to most commonly-used antibiotics, such as penicillin, ampicillin, cloxacillin, erythromycin, co-trimoxazole, streptomycin, and tetracycline.

Yeast strains encountered in large numbers included *Saccharomyces cerevisiae*, *Kluyveromyces* sp., *Torulopsis* sp., *Rhodotorula* sp., *Candida* sp., and *Geotrichum* sp., while the fungal isolates were *Aspergillus fumigatus*, *A. niger*, *A. flavus*, and *Rhizopus stolonifer* (4).

We observed that the level of microbial contamination clearly exceeded the tolerable limits (5), and the presence of a large number of pathogenic organisms, including *S. aureus*, *B. cereus*, *E. coli*, etc., is a cause for concern. There is an urgent need for establishing certain minimum hygiene practices in the preparation of herbal remedies in this environment. Also the Government should take adequate control measures to set specific standards for quality and dosage for traditional medications. Otherwise, a lot of harm may be done to the health of those who patronise herbalists for medical care.

Correspondence and reprint requests should be addressed to:
Dr. I.A. Adeleye
Department of Botany and Microbiology
University of Lagos
Akoka, Lagos
Nigeria
Email: adeyemi21@yahoo.com

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I.A. Adeleye, G. Okogi, and E.O. Ojo

*Department of Botany and Microbiology
University of Lagos
Akoka, Lagos
Nigeria
Email: adeyemi21@yahoo.com*