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ANTI-MALARIA HERBAL PREPARATION SOLD IN SOME MOTOR PARKS IN LAGOS STATE.

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ABSTRACTS

This project work studied the level of microbial contamination of, and micro-organic associated with, samples of anti-malarial herbal preparations sold in some motor parks in lagos state. A total of 85% microbial isolates were obtained from 12 herbal preparation samples (3 samples each from sales outlets in okokomaiko, iyana-iba and igando motor parks). The powder herbal sample from igando had the highest total aerobic count (tac) $7.5*10^3$ cfu/g, followed by the powder herbal sample from okokomaiko with $6.5*10^3$ cfu/g. The least tac was $1.0*10^1$ recorded for the corn steep liquor concoction from okokomaiko had the highest staphylococcus aureus count (SAC). The alcohol-based herbal preparation samples had zero sac. The highest escherichia coli count (ECC) was $1.3*10^4$ cfu/ml recorded for corn steep liquor concoction from okokomaiko. The remaining samples had zero ecc, except for the corn steep liquor concoction from igando with $1.6*10^2$ cfu/ml EEC.

Keywords: Anti-Malarial, Herbal, Micro-Organism, Azadirachta indica, Trado-medicine.

INTRODUCTION

Malaria is a disease of global importance because of high mortality and morbidity it causes among children under five years and pregnant women in the subtropical and tropical regions of the world (Achi et al., 2018; Afolabi and Abejide, 2020). More than 200 million cases of malaria are reported annually and over 420,000 deaths are recorded yearly (Michael and Lawrence, 2019; Bekono et al., 2020). Out of approximately 80% of mortality from malaria recorded in 13 countries in Africa, Nigeria, Ethopia, Congo, Tanzania and Kenya account for more than 40% (Afolabi and Abejide, 2020). Malarial parasites develop resistance against the available antimalarial orthodox drugs, and this has necessitated the adoption of alternative herbal remedies to treat malarial infection (Bhatnagar and Das, 2007). The use of herbal medicines to treat malaria is a common practice in most parts of African and Asian continents where infestation by malarial parasites is endemic. In the recent past, several researches have been conducted on the antimalarial activity of many single plant extract or combined extracts preparations (Omoya and Oyebola, 2019; Afolabi and Abejide, 2020). The leaves of Azadirachta indica (A. juss) and stem – bark Alstonia boonei (De wild) are used as herbal antimalarial preparations because of their reported efficacy (Iyamah and Idu, 2015; Afolabi and Abejide, 2020). Various parts (leaves, bark, root, fruits, seeds, flowers, gum, oil) of A. indica and A. boonei contain therapeutic phytochemicals that are effective in treating diseases such as malaria, diabetics, rheumatism, helminthiasis, dysmenorrhea, cancer, hypertension, heart diseases, pains, fungi, viral and bacterial 90 infections (Adotey et al., 2012; Islas et al., 2020). The phytochemical, tetrahydro -4-((E)-7-hydroxy6,14-dimethyl-15-m-tolylpentadec-13-enyl) pyran2-one (TMDTP) purified from the stem - bark of A. boonei was reported to be a potent inhibitor of lactate dehydrogenase and plasmepsin II enzymes present in Plasmodium falciparum hence validating the folkloric use of this plant in preparing antimalarial herbal decoction and recipe (Olanlokun et al., 2019). Compounds such as nimbin, azadirachtin, nimbidiol, quercetin, nimbidin have been purified from A. indica plant (Rajkumar et al., 2011; Islas et al., 2020). Although many antimalarial herbal medicines have been reported to be effective when prepared from one plant's extract, however, their potency is usually boosted when two or more plants' extracts are combined (Agbedahunsi et al., 2016; Mehrdzadi et al., 2020). The preference to use the mixture of extracts over a single extract as an antimalarial herbal medicine is based on the belief that combination of plants extracts cures some other complications that come with malaria

(Odugbemi et al., 2007).

AIMS AND OBJECTIVES

The main objective of the study was to determine the level of microbial contamination of raw identify the micro-organism association with anti-malarial herbal preparations sold in some motor parks in Lagos state.

Scope of study

1. To determine the microbial load (in cfu/g) of each anti-malarial herbal preparation.
2. To identify the contaminating micro-organism in the herbal preparation.

MATERIALS AND METHODS

Materials

MEDIA USED

MSA-Mannitol salt agar (500ml)

EM

B -Eosin methylene blue agar (500ml) SSA -

SDA - Saubor and Dextrose Agar (500ml)

Sample code	Dosage form	Content	Formulation base	ɹocation ɔutlet	sales
A	Solution	Azadaractga Indica Senna Occidentalis Enantia Chloranthia	water	Ɔkoko ɔark	motor
B	Powdered	Ginger lily Stem and root Tropical carpet Grass	-	Ɔkoko ɔark	motor
C	Solution	Lemon grass Ananas Comosus Artemisnia Annua	Alcohol	Ɔkoko	
D	Solution	Lemon grass Ananas Comosus Artemisnia Annua	Liquid cornsteep liquor	Ɔkoko	
E	Solution	Cinchona barks Citrus Aurantifolia Citrus limon	-	Ɔkoko ɔark	motor
F	Powdered	Psidum guajava Ananas Comosus Bambosa sp Azadaradtra Indica	Water	gando, ɔark	motor
G	Solution	Sorghum Bicolore Gossypium Arboretum citrus Sinesis Citrus paradis	Alcohol	gando	
H	Solution	Enanlia	Consteep	Igando	

		Chloranthia Citrus Aurantifolia Azaridachta Indica Cocos nucifera Occionum gratissiumum		
I	Solution	Artemisnia Annua Cinchona bark Citrus Aurantifolia	Water	Nigeria, igando
J	Powdered	Alligator pepper Grain Native pear Barks Magnifera Indica leaves	powder	Nigeria, igando
K	Solution	Alstonia bonei Citrus medica Ananas Comosus Aloridactita Indica Zingiber Officinalis Gossypium Barbadense	Alcohol	Nigeria, igando
L	Solution	Citrus Aurantifolia Lawsonia Inermis Azaridadita Indica Morinda incida Magnifera Indica Ficus capensis Shonocentrum	Consteep liquid	Nigeria, Iyana iba

Jollyanum
Theobrona
Cacao
Haudea latifolia

Peptone water (500ml)

Glycerol (5ml)

Pseudomonas Supplement (5ml)

Distilled water methylated spirit

SOURCES OF SAMPLE

Twelve (12) different herbal medicinal preparations for malaria were collected from (3) three traditional medicine sales outlets in lagos-state,the outlets where in okokomaiko, Iyana-iba, and igando motors parks. Each samples was collected aseptically into sterile bottles and immediately taken to the laboratory for analysis. Each sample bottles were appropriately labeled.

Sterilization of materials

Test Tubes, pipette, beaker, conical flask, bijou bottles, glass bottles were all sterilized using hot air oven set at 150^0c for 1 hour 30 minutes and the culture media were autoclaved at about 121^0c for 15 minutes…

MATERIALS AND REAGENT FOR BIOCHEMICAL TESTS

Lacto phenol blue solution, safranin stain, 70% ethyl, Gram iodine, alcohol, crystal violet, glassrod, sterile distilled water. 3% hydrogen peroxide, normal saline, tryptone water, plasma, kovac's reagent, bijou bottle, freshly prepared oxidase reagent or an oxidase reagent strip fitter paper.

Media preparation was done in normal procedure.

RESULT

Table 1

This antimalaria herbal preparation was brought from some major motor park in Lagos State.

Table 2

Cultural and microscopic characteristics of microbial isolate from antimalarial herbal preparation in Lagos State.

Media	Cultural characteristics	Microscopic characteristics
Monitor salt agar	Golden yellow	Gram positive cocci
Salmonella shigella agar	Large colonies with darkening at center	Gram negative rods
Pseudomonas base agar	Produce blue gree colournation	Gram negative rods
Eosin methylene blue agar	Micleated colonies (dark) with green metallic-sheen	Gram negative rods
Sabrand dextrose agar	Velvety to flaky surface due to marked sporulation with black colour	Septate hyphae borne catarally in the hyphae are the condiophores
Saborand dextrose agar	Long-fibered, rough woodly network of hyphae initially white, late grey with numerous black doti (sporangia) the entres petric dish is filled after a few days.	Thick,nonseptate sporangiophores departing laterally from the mycellum ramified spherical at the end sporangia filled with spores.
Saborand dextrose agar	Smooth, flat to arched, frequently pscudomycedium and mycelium growing into the agar white to cream colouration with pasty colonies.	Septate mycelinm, no air mycelinn

Table 3

Biochemical characteristics of isolates.

Gram reaction	Catalase	Coagulase	Oxidase	Motility	Indole	Urea	Organisms
-	+	+	-	+	+	-	*E.coli*
-	+	-	-	+	-	-	*Salmonella sp.*
+	+	+	-	-	+	-	*Staphylococcus sp.*
+	+	+	+	+	-	-	*Pseudomonas sp.*

DISCUSSION

Herbal anti-malarial are herbal drugs use in form of concoction and decoction from root and stem and flower from various plant which is believe to anti-malaria, we have some risk associated with their uses findings from this study shows that the anti-malaria studies were contaminated with large number of pathogen organism of public health. The alcohol base preparation recorded lower microbial load than the water base preparation which recorded load above acceptable, alcohol contain some level of concentration which could be source inhibition activities on some micro-organisms.

CONCLUSION

Some of the anti-malarial herbal preparation sample had microbial load greater than the acceptable standard, therefore part of good micro-biological quality. The presence of some likely pathogens and opportunities pathogen in these samples posed a health risk.

RECOMMENDATION

The traditional could have been the source of contaminated has the hygienic requirement. Soil could also be the source of contamination as medicinal plant materials normally could carry a large number of microbial contaminated original from the soil. Some attention could be given to this alternative branch in medicine so that the limitation does not overshadow in benefits.

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