CONTACT:

Address: No. 22 Cupid Road, Kubwa, Abuja.

Nationality: Nigerian

Marital Status. Married

Date Of Birth: 20th November 1982

Email: abahitoa@gmail.com

Mobile +234-7069955019

LANGUAGE SPOKEN:

English

French

SKILL & COMPETENCIES

- Leadership
- Creativity
- Goal Oriented
- Future focus
- Time management
- Administrative & management
- Computers and electronics
- Language skills (fast learner)

Training Attended:

Behavioral Interviewing Training	July 10, 2012
Complaint Handling –	Sept 20, 2013
Operator Communication -	March 14, 2014
Data Collection-	August 12, 2015
Animal life Safety-	November 3, 2016
Human life Safety	January 3, 2017

REFERENCE

To be Provided on request

ABAH VICTOR ITOA

OBJECTIVE

I am Friendly, motivated and resourceful personwith a passion toward driving sustainable atmosphere for all living creature and making our ecosystem a conducive environment . I have a good experience, in managing plants and animals. respected by my colleagues in the field and playing leadership role toward sustaining the ecosystem. Aiming to leverage my knowledge infectively perform in a management position in any organization.

EDUCATION

University of Calabar, Cross River State
BS.c Wildlife Conservation

University of Calabar, Cross River State
MS.c Wildlife Conservation

University of Calabar, Cross River State
Phd Wildlife Conservation

WORKING EXPERIENCE

KUROP NATIONAL PARK **2007 -2014**

Position: Educational Specialist

Influencing, Controlling and Coordinating the park Guards
Seeing into the welfare of Animals
Taking data of plant and animals
Mixture of composed manure
Domestication of wild plants

NGEL NYAKI FOREST RESERVE **2004 - 2006**

Position: Forester

Planting of Trees
Keeping data of plants and animals in the region.
Preventing deforestation and Wild fire

ECOSPHERE CONSERVATION FOUNDATION 2015 -2023

Position: CEO

Domestication of wild plants
Influencing, Controlling and Coordinating various conservation project
Seeing into the welfare of Animals
Taking data of plant and animals

INTEREST:

Interested in Nature

Report generated on 19:02 Tuesday, 21 June 2022

CORPORATE AFFAIRS COMMISSION

Status Report

INCORPORATED TRUSTEE DETAILS

Incorporated Trustee Name	ECOSPHERE CONSERVATION FOUNDATION
IT Number	183030
Date of Registration	Jun 21, 2022
Incorporated Trustee Type	INCORPORATED TRUSTEE
Registered Address	NO. 4, ODUDUWA CRESCENT, OFF SULTAN DASUKI ROAD, PHASE 2, SITE 2, KUBWA, ABUJA, NIGERIA
Branch Address	NIL
Post Code	NIL
Email	ABAHITOA@GMAIL.COM
Status	ACTIVE
Principal Activity	AN ENVIRONMENTAL PRESERVATION FOUNDATION
Due Date of Accounts	Jan 31, 2023

TRUSTEE'S / SECRETARY'S DETAILS

1.

1. ROLE TYPE	TRUSTEE
IS CHAIRMAN	YES
SURNAME	ABAH

FIRSTNAME	VICTOR
OTHER NAME	ITOA
EMAIL	ABAHITOA@GMAIL.COM
PHONE NUMBER	07069955019
NATIONALITY	NIGERIA
SERVICE ADDRESS	NO. 4 ODUDUWA CRESCENT, OFF SULTAN DASUKI ROAD, PHASE 2, SITE 2, KUBWA, AUJA, FCT, NIGERIA
RESIDENTIAL ADDRESS	NO. 4, ODUDUWA CRESCENT, OFF SULTAN DASUKI ROAD, PHASE 2, SITE 2, KUBWA, AUJA, FCT, NIGERIA
GENDER	MALE
DATE OF BIRTH	November 1982
DATE OF APPOINTMENT	Jun 21, 2022
STATUS	ACTIVE

2.

2. ROLE TYPE	TRUSTEE
IS CHAIRMAN	NO
SURNAME	NWANKWO
FIRSTNAME	OBIECHINA
OTHER NAME	GODWIN
EMAIL	OWONDIOWU@GMAIL.COM
PHONE NUMBER	08034486120
NATIONALITY	NIGERIA
SERVICE ADDRESS	PLOT B 130 GWANTU CLOSE, OFF GADO NASKO WAY, 2/2, KUBWA, ABUJA, FCT, NIGERIA
RESIDENTIAL ADDRESS	PLOT B 130, GWANTU CLOSE, OFF GADO NASKO WAY, 2/2, KUBWA, ABUJA, FCT, NIGERIA
GENDER	MALE

DATE OF BIRTH	September 1972
DATE OF APPOINTMENT	Jun 21, 2022
STATUS	ACTIVE

3.

3. ROLE TYPE	TRUSTEE
IS CHAIRMAN	NO
SURNAME	ARIKPO
FIRSTNAME	IRENE
OTHER NAME	GABRIEL
EMAIL	IRENEGABRIEL000@GMAIL.COM
PHONE NUMBER	08032738083
NATIONALITY	NIGERIA
SERVICE ADDRESS	NO. 4 ODUDUWA CRESCENT, OFF SULTAN DASUKI ROAD, PHASE 2, SITE 2, KUBWA, ABUJA, FCT, NIGERIA
RESIDENTIAL ADDRESS	NO. 4, ODUDUWA CRESCENT, OFF SULTAN DASUKI ROAD, PHASE 2, SITE 2, KUBWA, ABUJA, FCT, NIGERIA
GENDER	FEMALE
DATE OF BIRTH	November 1990
DATE OF APPOINTMENT	Jun 21, 2022
STATUS	ACTIVE

4.

4. ROLE TYPE	TRUSTEE
IS CHAIRMAN	NO
SURNAME	MADAKI
FIRSTNAME	JOSHUA
OTHER NAME	IZANG

EMAIL	JOSHMAKIS@GMAIL.COM
PHONE NUMBER	08069593234
NATIONALITY	NIGERIA
SERVICE ADDRESS	HOUSE 9, ROAD 11, EFAB ESTATE, KADO LIFE CAMP, ABUJA, FCT, NIGERIA
RESIDENTIAL ADDRESS	1
GENDER	MALE
DATE OF BIRTH	May 1985
DATE OF APPOINTMENT	Jun 21, 2022
STATUS	ACTIVE

SECRETARY'S DETAILS

1.

1. ROLE TYPE	TRUSTEE_SECRETARY
SURNAME	MADAKI
FIRSTNAME	JOSHUA
EMAIL	JOSHMAKIS@GMAIL.COM
PHONE NUMBER	08069593234
NATIONALITY	NIGERIA
SERVICE ADDRESS	HOUSE 9, ROAD 11, EFAB ESTATE, KADO LIFE-CAMP, ABUJA, FCT, NIGERIA
RESIDENTIAL ADDRESS	1
GENDER	MALE
DATE OF BIRTH	May 1985
DATE OF APPOINTMENT	Jun 21, 2022
STATUS	ACTIVE
DATE OF TERMINATION	Nil

This is the true extract of the incorporated trustee's status from the Register as at 21 June 2022.

Corporate Affairs Commission

Certified Extract

A. G. ABUBAKAR
Registrar General

Jun 21, 2022

FEDERAL REPUBLIC OF NIGERIA

CERTIFICATE OF INCORPORATION

REGISTRATION NUMBER 183030

The Registrar - General of Corporate Affairs Commission

hereby certifies that

VICTOR ABAH OBIECHINA NWANKWO IRENE ARIKPO JOSHUA MADAKI

the duly appointed Trustees of

ECOSPHERE CONSERVATION FOUNDATION

have this day been registered as a corporate body.

Given under my hand at Abuja this 21st day of June, 2022

A. G. Abubakar
Registrar - General

ECOSPHERE CONSERVATION FOUNDATION

ADDRESS: No. 4, Oduduwa Crescent O ffSultan Dansuki Road, Phase II, Site II.

E-mail: ecosphereconservationfoundatio@gmail.com

Website: *http//: ecoscon.org*

FOUNDATION PROFILE

PRESERVATION OF WILD LIFE AND CONSERVATION

ECOSPHERE CONSERVATION FOUNDATION

01. **Organization Details**:

a) Name of the Organization : **ECOSPHERE CONSERVATION FOUNDATION.**

b) Address : No. 4, Oduduwa Crescent Off Sultan Dansuki Road, Phase II, Site II.
: Kubwa, Abuja, Nigeria.
Phone: +234-7069955019, 08034486120, 07047245279
E-mail: ecosphereconservationfoundatio@gmail.com
Website: http//: ecoscon.org

c) CEO & Founder : **Ambassador:** Abah Victor Itoa (Researcher)

d) Contact Person : **Ambassador** Abah Victor Itoa (Researcher)
CONTACT:
Mobile Number: +234-7069955019
Email: abahitoa@gamil.com

e) Internal Project Manager :Nwankwo .G. Obiechina :
CONTACT:
Mobile Number: +234-8034486120, +234-8023559906
Email: owondiowu@gmail.com

f) External Project Manager : Philemon Terungwa Abella
CONTACT:
Mobile Number: +234-9010028584
Email: philemonabella@yahoo.com

g) **Legal Status of the Organization** :

i) Registration Authority : Corporate Affairs Commission (CAC), Federal Republic of Nigeria

ii) Registration No : CAC/IT/NO/183030.

iii) Date : 21.06.2022

iv) Registration Authority : Companies and Allied Matters Act, LFN 2004

: Regt No: 183030.

v) Registration was approved by : A.G Abubakar (Registrar – General)

02. **Background**: **ECOSPHERE CONSERVATION FOUNDATION** is a non- governmental organization founded by a Philanthropist and lover of humanity Mr. Abah Victor Itoa (Researcher). The foundation was established with a clear vision and passion of making life better for all animals, Plants and our Ecosystem. It also aims at organizing regular sensitization programs and symposium discussion that will bring sanity and civility to the general population by making the environment conducive for all living creatures ; by taking up issues that affect animals, Plants, C limate change and our Ecosystem.

Looking into the alarming rise in societal ill animals, Plants and our Ecosystem, Mr. Abah Victor Itoa (Researcher) realized that the society is too quiet and shying away from the truth. He decided to team up with like minds to analyze, strategize, and come up with veritable workable solutions to create avenues that will address all these challenges . The RSF equally aims at adequately sensitizing women, youths and children on human rights and nation building towards enshrining peace and national security . As we know the power in getting the right information at the right time works effectively to preserve our social norms and values. We can't deny challenges facing Africa, most of which are well captured in the 17 Sustainable Development Goals (SGDs). As a passionate and green blooded Nigerian, the Founder believes that the welfare of indigent People, Animals, Plants and at large, who make a large chunk of our Ecosystem, should be paramount to all. The fulcrum of h is desire is in the belief that the lives of plants and animals should always count, thereby making the impact of the Foundation effectively and efficiently felt, as the Foundation is poised to reach hundreds of thousands in one outreach. As a role model, it is his responsibility to affect much Plants, Animals

and making our Ecosystem a conducive environment by educating the general public about the importance of plants and animals in our communities.

ECOSPHERE CONSERVATION FOUNDATION shall continue to dedicate its resources, time and passion into making a difference in those particular sectors as we feel they are the most vulnerable in the society and shall constantly c reate a conducive atmosphere for allliving creatures by planting trees and domesticating wild animals and keeping well organized data of plants and animals in our communities at large and teaching humans of the values in plants and animals.As a matter of fact, we are committed to building a better future for the Ecosystem in a way that every human can have pure natural air away from toxins.

03. Year of Establishment: - ECOSPHERE CONSERVATION FOUNDATION started its work of Conservation and Protection in 2015

04. Project Activities: The ECOSPHERE CONSERVATION FOUNDATION activities started from 2015.

05. Vision, Mission and Goal:

5.1. Vision: To ensure a better living standard for humans, Plants and Animals of concern in all aspects of the society**.**

5.2: Mission Statement:

To acquiesce on equal opportunity for all to benefit from modern necessities of life such as Purified Natural Air, Wild life and Agriculture.

5.3: Passion: Building a better future for all through outreach that ensures equal opportunities for all living creatures.

6. Our Core Values:

6.1 ENLIGHTENMENT/ADVOCACY: ECOSPHERE CONSERVATION FOUNDATION is a Foundation that enlightens people; to create awareness of the advantages of planting trees and protecting the wild life.

6.2 EDUCATION: **ECOSPHERE CONSERVATION FOUNDATION** visits schools , educating children on the importance of plants and animals to the ecosystem.

6.3 EMPOWERMENT: **ECOSPHERE CONSERVATION FOUNDATION** offers various empowerment to the indigenous youth in local communities and adults by engaging them on human capacity building. **ECOSPHERE CONSERVATION FOUNDATION,** does this in other to dissuade them from poaching and deforestation.

6.4 PLANTS AND ANIMALS ADVOCACY: **ECOSPHERE CONSERVATION FOUNDATION** offers support to Plants and Animals by domesticating plants and Animals.

6.5 AGRICULTURE: **ECOSPHERE CONSERVATION FOUNDATION** promotes agriculture by distribution of fertilizers, seedlings, farm tools etc. to farmers.

6.6 HEALTH: **ECOSPHERE CONSERVATION FOUNDATION** provides aids in medical challenges, free drugs distribution and health education in local communities.

7. Track Record of Experience

NAME OF PROJECTS/PROGRAM	MAJOR PROGRAM FOCUS	GEOGRAPHIC COVERAGE	DONOR NAME/PARTNER
Carried out Human Capacity Building	Provision of Motorcycle to the youths	13 Barack Calabar, State in 2015	**ECOSPHERE CONSERVATION FOUNDATION**
Plant, Animal and Ecosystem Education	Enlightening the general population about the importance of plants and animals in the ecosystem	Byahzin Across settlements in Abuja, 2016,	**ECOSPHERE CONSERVATION FOUNDATION**
Carried out Human Capacity Building	Provision of Motorcycle to the youths of the community	Takai Community in Kano in 2017	**ECOSPHERE CONSERVATION FOUNDATION**
Reforestation Project	Planting over 850 trees in the northern region of the country	Makado Local Government	**ECOSPHERE CONSERVATION**

NAME OF PROJECTS/PROGRAM	MAJOR PROGRAM FOCUS	GEOGRAPHIC COVERAGE	DONOR NAME/PARTNER
		Area, Kano in 2018	**FOUNDATION/ AKC NOBLE**
Feed and Fertilizer Intervention	Provision of feeds for livestock farming and also fertilizer for farmers, in the northern region of the country	Bakori Local Government Area Katsina State, 2019.	**ECOSPHERE CONSERVATION FOUNDATION**
Carried out Human Capacity Building	Provision of Motorcycle to the youths	Daura Local Government Area, Katsina State2020	**ECOSPHERE CONSERVATION FOUNDATION**
Domestication Project	Domestication of *Annona muricata* (Soursop),	Dukku, Local Government Area, Gombe State in 2021	**ECOSPHERE CONSERVATION FOUNDATION**
Feed and Fertilizer Intervention	Enrolled two (2) Provision of feeds for livestock farming and also fertilizer for farmers, in the northern region of the country	Ra fiLocal Government Area, Niger State in 2022.	**ECOSPHERE CONSERVATION FOUNDATION**
Data Collection	Collecting Data on various Plants and animals, for further study	Shiroro, Local Government Area, Niger State, 2023 in progress	**AKC NOBLE**
Carried out Human Capacity Building	Provision of Motorcycle for the Indigenous people and displaced people of Birini Gwari Local Government Area, Kamuku National Park	Birini Gwari Local Government Area, Kamuku National Park, Nigeria, in 2023	**ECOSPHERE CONSERVATION FOUNDATION & ALABA INTERNATIONAL IN KUBWA, ABUJA**

8. **Statement of Staff**.

SL No	Nature of Sta ff	Number of Staff		Total
		M	F	
01	Founder	1	-	1
02	Manager	3	1	4
03	External Project Manager	1	-	1
04	Account Officer	-	1	1
05	Internal Project Manager (P.M)	1	-	1
06	Secretary	1	-	1
07	Communication Officer	2	1	3
08	Receptionist	-	1	1
09	Office Care-Taker	1	-	1
10	Volunteer	45	4	49
11	Cleaner	-	2	2
12	Security	2	-	2
	Total	**58**	**9**	**67**

THE CONSTITUTION
OF
ECOSPHERE CONSERVATION FOUNDATION

PREAMBLE

We, the members of ECOSPHERE CONSERVATION FOUNDATION a not for-profit and non-political organisation do firmly and solemnly resolve to provide for ourselves a constitution and to be governed by the provisions therein contained.

ARTICLE 1: NAME

The name of the Association is ECOSPHERE CONSERVATION FOUNDATION

ARTICLE 2: ADDRESS

The address of the Association shall be : NO. 4, ODUDUWA CRESCENT, OFF SULTAN DASUKI ROAD, PHASE 2, SITE 2, KUBWA, ABUJA, NIGERIA

ARTICLE 3: AIMS AND OBJECTIVES

SN	THE AIMS AND OBJECTIVES OF THE ASSOCIATION ARE:
1	TO CARRY OUT ANY INITIATIVE TOWARDS THE PRESERVATION OF THE ECOSYSTEM WHICH MAY INCLUDE MAINTAINING ANY PART OF THE ECOSYSTEM.
2	TO PROMOTE ADVOCACY ON THE NEED TO PROTECT THE ECOSYSTEM
3	TO CARRY OUT ADVOCACY ON SUSTAINABLE DEVELOPMENT OF THE ECOSYTEM
4	TO CARRY OUT ADVOCACY TOWARDS ACHIEVING THE SUSTAINABLE DEVELOPMENT GOALS PARTICULARLY AS IT RELATES TO THE ENVIRONMENT.
5	TO COLLABORATE WITH OTHER ORGANIZATIONS WITH SIMILAR OBJECTIVES FOR THE

Corporate Affairs Commission
Certified Extract
A. G. ABUBAKAR
Registrar General
Jun 22, 2022

PURPOSE OF PROTECTING THE ECOSYSTEM.

ARTICLE 4: TRUSTEES

A. The Trustees of ECOSPHERE CONSERVATION FOUNDATION for the purpose of the Companies and Allied Matters Act CAP C20 LFN 2004, shall be elected at a General Meeting charged with responsibility of selecting the Trustees with 2/3 majority votes of members present.

B. Such Trustees (Hereinafter referred to as, "The Trustees") shall not be less than 2 and more than 15 in number.

C. A Trustee may hold office for 5 years but shall cease to hold office if he:

1. Resigns his office
2. Ceases to be a member of the registered Trustees of the body.
3. Becomes insane
4. Is officially declared bankrupt
5. Is convicted of a criminal offence involving dishonesty by a Court of competent jurisdiction
6. Is recommended for removal from office by a board of Governors and Trustees majority vote of members present at any General Meeting of the body
7. Ceases to reside in Nigeria

D. Upon a vacancy occurring in the number of Trustees a General Meeting will be held to appoint another eligible member of the Association.

ARTICLE 5: COMMON SEAL

A. The Trustees shall have a Common seal.

B. Such seal will be kept in the custody of the SECRETARY who shall produce it when required for use by the Trustees.

C. All documents to be executed by the Trustees shall be signed by such number of them and sealed with the Common seal.

ARTICLE 6: MEETINGS

For effective administration of the Association, there shall be the following meetings

Corporate Affairs Commission
Certified Extract
A. G. ABUBAKAR
Registrar General
Jun 22, 2022

SN	MEETING NAME	MEETING QUORUM
1	ANNUAL GENERAL MEETING (AGM)	A quorum shall be formed where there is a simple majority of members entitled to attend such meetings, PROVIDED THAT the Chairman at his discretion may allow any meeting to hold where there is no quorum if he reasonably considers such a meeting expedient.
2	EXECUTIVE COUNCIL MEETING (ECM)	A quorum shall be formed where there is a simple majority of the executive council in attendance.
3	EMERGENCY MEETING (EM)	Emergency Meeting of the Church shall be convened as need arises, and it shall have the powers of a General Meeting.

ARTICLE 7: GOVERNING BODY

THE GOVERNING BODY SHALL CONSIST OF THE BOARD OF TRUSTEES & EXECUTIVE COUNCIL (I.E CHAIRMAN, VICECHAIRMAN, GENERAL SECRETARY, LEGAL ADVISER, TREASURER, FINANCIAL SECRETARY, AUDITOR, AND PUBLICITY SECRETARY)

ARTICLE 8: SOURCES OF INCOME

The sources of income for the Association shall include:

1. DONATIONS AND GRANTS

2. GIFTS AND PLEDGES

3. LEVIES

ARTICLE 9: DISBURSEMENT AND APPLICATION OF FUNDS

THE FUNDS OF THE FOUNDATION SHALL BE APPLIED TOWARDS THE ACTUALIZATION OF ITS SET OBJECTIVES.

ARTICLE 10: KEEPING ACCOUNT

THE FOUNDATION SHALL MAINTAIN A CURRENT ACCOUNT WITH A REPUTABLE BANK AS MAY BE APPROVED BY THE BOARD OF TRUSTEES. IN ADDITION THERETO, THE FINANCIAL SECRETARY SHALL ENSURE THE ACCURATE KEEPING OF RECORDS OF ALL INCOME AND EXPENDITURE OF THE FOUNDATION.

Corporate Affairs Commission

Certified Extract

A. G. ABUBAKAR
Registrar General
Jun 22, 2022

ARTICLE 11: APPOINTMENT OF AUDITOR(S)

1. Independent qualified and licenced Auditors shall be appointed by the general meeting to audit the financial records of the Association annually and submit an audited report to the Annual General Meeting of the Association.
2. The audited financial statements (balance sheet and income and expenditure account) duly certified by independent auditors shall be annexed to the annual returns and file with the Corporate Affairs Commission.

ARTICLE 12: AMENDMENT OF CONSTITUTION

The Association may alter the provision of its Constitution at a General meeting by a resolution passed by a simple majority of its members and approved by the Commission.

ARTICLE 13: SPECIAL CLAUSE

1. THE INCOME AND PROPERTY OF ECOSPHERE CONSERVATION FOUNDATION shall be appliedsolely towards the promotion of the objective of the body as set forth in this RULES ANDREGULATION/CONSTITUTION: and no portion thereof shall be paid or transferred directly orindirectly, by way of dividend, bonus or otherwise howsoever by way of profit, to the members of the Association.
2. PROVIDED that nothing herein shall prevent the payment in good faith, or reasonable and properremuneration to any officer or servant of the Association in return for any service actually rendered to the Association:
    a. With the exception of ex-officio members of the Governing Council, no member of the Council of Management or Governing Body shall be appointed to any salaried office of the Association or any office of the Association paid by fees; and
    b. No remuneration or other benefit in money or money's worth shall be given by the body to any member of such Council or Governing Body except repayment of out of pocket expenses or reasonable and proper rent for premises demised, or let to the Association or reasonable fees for services rendered.
3. If in the event of a liquidation/winding-up or dissolution of the corporate body there remains after the satisfaction of all its debts and liabilities, any property whatsoever, the same shall not be paid to or distributed among the members of the Association but shall be given or transferred to some other institutions, having objectssimilar to the object of Association, such institutions to be determined by the members of the Association at or before the time of dissolution.
4. If effect cannot be given to the aforesaid provisions, then the remaining property shall be transferred to some charitable object.

DATED THIS 21st **DAY OF** June **20** 22

Corporate Affairs Commission

Certified Extract

A. G. ABUBAKAR
Registrar General
Jun 22, 2022

Jun 21, 2022

Signature of Chairman

Jun 21, 2022

Signature of Secretary & Date

ABAH VICTOR ITOA
07069955019

Name of Chairman & Tel. No.

MADAKI JOSHUA IZANG
08069593234

Name of Secretary & Tel. No.

Corporate Affairs Commission

Certified Extract

A. G. ABUBAKAR
Registrar General
Jun 22, 2022

SPECIAL CONTROL UNIT AGAINST MONEY LAUNDERING
(SCUML)

151416747

RN: SC

Certificate of Registration

I hereby certify that

ECOSPHERE CONSERVATION FOUNDATION

Has been duly registered in accordance with the provisions of Section 17(2)(a) of the Money Laundering (Prevention and Prohibition) Act, 2022 and any other Law or Regulation.

Director

Date of Issue: 17th NOVEMBER 20 22

230354

© NSPMP.C.

CERTIFICATE

OF TAXPAYER IDENTIFICATION NUMBER

JTB
JOINT TAX BOARD

This Certificate is Issued By Joint Tax Board

Taxpayer's Name	**ECOSPHERE CONSERVATION FOUNDATION**
TIN	**1070647951**
Date of Issue	**18 May 2023**
Tax Authority	**FEDERAL INLAND REVENUE SERVICE**
Address	**4, NO. 4, ODUDUWA CRESCENT, OFF SULTAN DASUKI ROAD, PHASE 2, SITE 2, KUBWA, ABUJA, , , ABUJA, FCT, NIGERIA**

Secretary, JTB

RC:183030

ECOSPHERE CONSERVATION FOUNDATION

Preservation of wild life and Conservation

Tel: +234706995019
+2348034486120
P. M. B:1198

ecosphereconservationfoundation@gmail.com

Our Ref:.....Your Ref:.....

Domestication of GARCINIA KOLA for the treatment of multiple human illnesses

PROJECT DESCRIPTION

The consensus of Scientists and public health workers is that Malaria Kills up to 2.7 million persons each year. Nine out of ten of these cases and deaths occur in Africa and the vast majority of them are children under the age of five years. The estimated number of Malaria deaths stood at 619000 in 2023. The WHO African Region carries a disproportionately high share of the global Malaria burden. Some types of Malaria can cause severe illness and death. Infants, children un der 5years, pregnant women, travelers and people living with HIV or AIDS are at higher risk

SEVERE SYMPTOMS INCLUDE

{1}Extreme tiredness and fatigue {2}Impaired consciousness {3}Multiple convulsions {4}Difficulty in breathing {5}Dark or bloody urine {6}Jaundice {yellowing of the eyes and skin abnormal bleeding} ECOSPHERE CONSERVATION FOUNDATION is bringing in solution to Malaria issue to our Communities and the p eople around as , we are ready to run back to nature following our research team activities by bringing help to our communities by giving people the natural treatment of Malaria. The global practice of medicine of health and wellness is pivotal to human exi stence before, now and in the future. The practice of medicine and medical practices is an age long experience that has accentuated the scope of human endeavors. In Africa, the practice of resorting to nature for medical and social well being is confidentl y adopted in the wide spread belief of approaching nature for solution which has always presented itself as a succor to their needs and aspirations. There are a lot of plants that nature has bestowed the world, particularly the continent of Africa, which boost of a thick and rich vegetation that is abound with natural resources that is of global importance. One of such important plant is the Garcinia Kola, popularly known as the BITTER KOLA. Garcinia kola has been a medical platform to fall back to when there is the need for remedies to common ailment like Cold, E sophagus tract infections, Malaria,

Cough, I nfluenza, and up to more complex medical conditions such as V iral infections of high medical proportions. However, being largely a nd a wild tree, the existence of the plant GARCINIA KOLA is threatened that it may soon go o ff from planet earth due to the activities of those that have access to the miracle plant. This project seeks to domesticate the plant and save it from going extinct for the benefit of posterity and medicine as our research activities shows clear fact that **GARCINIA KOLA** is valuable and good for the treatment of malaria. And **ECOSPHERE CONSERVATION FOUNDATION** will create 250 Sub -units outlet across communities to make this miraculous Malaria treatment Nut to be available to the general public and to all the communities.

Garcinia kola is a tropical edible fruit that is consumed in Africa to uphold traditional norms and values during cultural events like marriages and traditional health treatment of multiple human illness and communal gatherings; it is equally an item that is used as a remedy for minor ailments. But it is pertinent to state here that, the precious forest Nut that has a semblance of kola nut is being treated with reckless abandon. There is the need to create a mechanism that will allow the plant to thrive, spread and gain its proper place in human existence for the sake o f posterity and Medicine. Much of the harvesting and consumption of Garcinia kola is done without recourse to crop re -cultivation and replacement. This project intends to fill that gap of harvesting, consuming planting and use it for treatment of multiple human illness

By replacing and creating an avenue for re -cultivation to maintain its existential and Medical values. The value of Garcinia kola is huge and holds a global medical attraction if allowed to thrive. It is the utmost desire of this project to create an ecosystem where Garcinia kola will be cultivated and allowed to thrive to enable its benefits to percolate down to all and sundry. Mankind desires good health and the monumental health benefits of this miracle edible forest nut, particularly for medical remedies. Propag ating the Garcinia kola in large Swaths will definitely bring mankind more good than harm. This can be done by establishing a research unit that will build a wide nursery that will make seedlings available for propagation to create a life cycle of availability at all times. The Garcinia kola need to be salvaged for the medical benefit of humanity. There is an availability of land in sub- Saharan Africa that can be dedicated to this project. Once the initial project objective is realized, tons of the Garcini a kola shall be produced and made available for laboratory analysis that will bring about a paradigm shift in the global

medical industry. In a nutshell, there is the need for t he Garcinia kola to be salvaged and use for Medicine, propagated and cultivated to make it available for research that will lead to a global medical breakthrough.

PROJECT STATEMENT SIGNIFICANT

The importance of Garcinia kola cannot be overemphasized. However, han dling and management of the plant is unethical and not conforming to standard. Being a tropical plant that grows in the wild, there is unfortunately no order of conservation in line with global climate change ethics and practices. The foraging and pilfering of the habitat is a situation that calls for concern. The broad scale clearing and degradation of forest plants and habitats is another main cause of species extinction. Deforestation affected an estimated 13 million hectares per year between 200 0 and 2010, with most happening in tropical countries. The loss of forests is regrettable not only due to the fact that trees provide a carbon sink which can help mitigate the impacts of climate change, but also because forests provide food, shelter and me dicine to many species of fauna and flora that are losing their natural habitat. This project seeks to undertake a rescue mission to salvage Garcinia kola the resource form for Medicine and make it the life saver that it is for Humans. The aggressive Propa gating and planting of Garcinia kola will retain the much needed hope and desire for mankind health benefits as it will be use in putting Malaria out of Communities.

PROJECT OUTPUT

1. Acquisition of at least 25 hectares of land for the propagation of Garcinia kola budding seedlings in a nursery.
2. Procurement of at least five Thousand (5,000) Garcinia kola seedlings for the pilot project.
3. Availability of at least Five Hundred bags of organic fertilizer to provide the needed moisture and pH level for the soil to ensure proper growth and crop yield.
4. Employment of at least One Hundred and Forty (140) personnel to provide adequate management of the nursery and farm project.
5. Production of at least 15 tons of Garcinia kola at first yield and eve n more yield as the plant grows older.
6. Availability of Garcinia kola for consumption and medical research

PROJECT CAPACITY FOR SUCCESS

ECOSPHERE CONSERVATION FOUNDATION , considers it as a point of duty to maintain the ecosystem by saving the Garcinia kola from abuse and eventual extinction and to use his nut for the treatment of Malaria.

There is strong evidence that we are into the opening stages of an extinction spasm; we are witnessing a mass extinction episode, in the sense of sudden and pronounced decline. Of all species that have ever existed, possibly half a billion or more, there now remain only a few million.

According to t he Food and Agricultural Organiz ation (FAO), the remaining primary forests cover rather less than 9 million squar e kilometers, out of the 15 million that once existed. Also, there is a general agreement that between 76,000 and 92,000 are eliminated outright each year due to the activities of man.

ECOSHPERE CONSERVATION FOUNDATION, intends to rely on its robust research mechanisms to execute a thorough job. The main source of information lies with remote -sensing surveys, which constitute a thoroughly objective and systematic mode of enquiry. The comparative advantage for **ECOSPHERE CONSERVATION FOUNDATION** , has access to Swaths of arable land within the Benue valley and Nasarawa plains of central Nigeria, it has access to Garcinia kola seedlings, and commitment of the relevant authorities to support this lofty initiative. Feasibility studies conducted has given **ECOSPHERE CONSERVATION FOUNDATION** an indicator of success following our life Sciences data.

Correspondence:

Abah Victor Itoa

(Researcher)

abahitoa@gmail.com

RC:183030

ECOSPHERE CONSERVATION FOUNDATION

Preservation of wild life and Conservation

Tel: +234706995019
+2348034486120
P. M. B:1198

ecosphereconservationfoundation@gmail.com

Our Ref:.....Your Ref:.....

Profile Analysis of the jungle seed (Garcinia kola) extracts Of Antimarial Activity and Cytotoxicity Analyzed by Ecospheric Conservation Foundation

TO WHOM IT MAY CONCERN

ABSTRACT

Background: The emergence of parasite resistance to artemisinins typified by slower parasite clearance rates in some parts of South east Asia has necessitated the search for alternatives. **Objective** This study evaluated the *in vitro* and *in vivo* antimalarial activity and the cytotoxicity profile of the *n*hexane, dichloromethane and methanol extracts of *Garcinia kola* seeds. **Methods:** *In vitro* susceptibility of chloroquine-sensitive PF D10 strain to the extracts was evaluated using parasite lactate dehydrogenase assay while cytotoxicity was determined using 3-[4,5-Dimethylthiazol-2-yl]-2,5- diphenyltetrazolium bromide (MTT) assay with Vero cells and emetine as standard drug. Chloroquine -resistant *P . berghei* (ANKA) infected Swiss mice allotted into 14 groups of 5 per group: corn oil (5mL/kg), 50, 100, 200, 400 mg/kg of each extract and chloroquine (10 mg/kg) were used to evaluate *in vivo* antimalarial activity in a 4 -day suppressive test. **Results** The *n*-hexane, dichloromethane and methanol extracts of the seeds of *Garcinia kola* were active *in vitro* against chloroquine sensitive *P. falciparum* D10 strain with IC50 values ≤ 26 µg/mL. The hexane and dichloromethane extracts were non - cytotoxic against Vero cells with IC 50 values ≥ 27 µg/ml The hexane extract of *Garcinia kola* seeds reduced parasitemia by 70% at 400 mg/kg and prolon ged survival in mice infected with *P. berghei* ANKA. **Conclusion** The observed antimalarial activity justifies the use of *Garcinia kola* seeds in the treatment of febrile illnesses.

Keywords: Antimalarial, *Garcinia kola seeds*, Cytotoxicity, Vero cells, Parasitemia.

INTRODUCTION

Malaria is an infectious disease affecting the tropical and subtropical regions of the world, including parts of the Americas, Asia and Africa, where it is endemic causing the death of hundreds of thousands of people annually esp ecially children below the age of five and pregnant women [1]. The use of artemisinin -based combination therapy, insecticide treated nets and residual spraying in malaria endemic regions has yielded significant dividends resulting in a reduction in the mor bidity and mortality attributable to the infection [2]. Unfortunately, the emergence and continuous spread of established artemisinin resistance across Southeast Asia mainland threatens global efforts to control and eliminate the most common and deadliest form of the malaria infection *Plasmodium falciparum* [3].

Medicinal plants have been in use for millennia and have been a valuable source of therapeutic agents, infact many of today's drugs are plant -derived natural products or their derivatives [4].

They h ave played a dominant and prominent role in the discovery of templates for the development of new drugs to treat diseases. Indeed, the existing antimalarial agents in use today are based on natural products and this could mean that new leads may likely eme rge from tropical plant sources [5] . *Garcinia kola* Heckel *(Guttifereae)*seeds commonly known as bitter kola is a nut-bearing medium sized tropical forest tree found throughout West and Central Africa. *Garcinia kola* is mostly found in the southern part of N igeria. It has a bitter taste followed by slight sweetness. The seed and leaves of *Garcinia kola* enjoys a folk reputation in Africa as a poison antidote [6] *Garcinia kola* is reported to possess hypoglycemic, antiparasitic, antimicrobial, antiviral, anti-inflammatory, antihepatotoxic and aphrodisiac properties [6, 7]. The seeds and leaf of the plant are used in folk medicine for the treatment of gram positive and gram negative bacteria, Ebola virus infections, dysentery and diarrhea [6, 7]. However, limited information on the *in vivo* antimalarial activity of seeds of *Garcinia kola* is available in literature. Efforts in this study were devoted to the evaluation of potential *in vitro* and *in vivo* antimalarial activity of the hexane, dichloromethane and methanol extracts *Garcinia kola* seeds against chloroquinesensitive *P. falciparum*D10 strain and chloroquine- resistant *P. berghei*in mice, respectively. Furthermore, the cytotoxicity profile of the hexane, dichloromethane and methanol extracts *Garcinia kola* was also evaluated using Vero cell line from the kidney of the African green monkey.

MATERIALS AND METHODS

Collection of plant materials

Samples of *Garcinia kola* seed (GKS) collected from farmers in Oyo town, Oyo state, Nigeria were identified and authenticated by plant taxonomists.

Preparation of Plant extracts

The seeds of *Garcinia kola* were air-dried and pulverised to a coarse powder using a table top blender. Five hundred grams (500 g) of the pulverised seeds was extracted exhaustively by cold maceration successively in *n*-hexane, dichloromethane and methanol at room temperature for 72 hours. The extracts were filtered, and the filtrates were concentrated to dryness using a rotary evaporator. The extracts were stored in a refrigerator (4°C) until required for assay.

*In vitro*antimalarial assay

Chloroquine-sensitive *P. falciparum* D10 strain derived from FCQ -27 from Papua New Guinea donated by the Division of Pharmacology at the University of Cape Town, South Afri ca was used for this study. The parasites were grown and maintained in continuous culture using a modification of the method of Trager and Jensen [8] . The culture medium consisted of 2% haematocrit suspension of O+ human erythrocytes in RPMI (Roswell Park Memorial Institute Medium) 1640, supplemented with ph enol red, 25mMNaHCO3, 25mMHEPES buffer (pH 7.4), and 50 mg_/mL g entamycin and hypoxanthine. The reagents were obtained from Sigma-Aldrich, South Africa.

In vitro antimalarial activity was determ ined using the parasite lactate dehydrogenase assay [9]. The plant extracts (2 mg) were initially dissolved in DMSO (200 µL) and t hen diluted in complete culture media to 200 µg/mL. Two -fold serial dilutions were done with culture medium in a 96-well plate to give an extract concentration range of 0.195-100 µgmL. One hundred microliter (100uL) of an asynchr onous

culture of *P. falciparum* at 2% parasiteamia and 2% haematocrit was added to each well of the 96-well plate and incubated for 48 hours at 37 oC. After incubation, the parasites were re-suspended by mixing gently using a multi-channel micropipette. Twenty microliter (20 µL) of the culture was taken from each well and added to a new 96-well microtitre plate containing 100 µL of the Malstat reagent in each well. \ Twenty-five microliter (25 µL) of a solution of 1.9 µM Nitro Blue Tetrazolium (NBT) and 0.24 µM Phenazine Ethosulphate (PES) were added to each well thus initiating the lactate dehydrogenase reaction. Parasite growth was determined spectrophotometrically at 620nm with the aid of a microplate reader after an hour of incubation in a dark cupboard. Absorbance values obtained were expressed as a percentage of the 100% growth value and plotted against corresponding concentrations of the drug. The IC50 values of the plant extracts were obtained from dose-response curves, using non-linear dose-response curve fitting analyses with Graph Pad Prism version 5.0. Extracts with IC50 ≤ 10 µg/mL were described as having good activity, while those with IC50 values > 10 µg/mL ≤ 30 µg/mL were described as having a moderate activity. Extracts with IC50 values ≥ 30 µg/mL were described as being inactive.

In vivo Antimalarial Tests

In vivo tests were performed according to the NIH guide for the care and use of laboratory animals, (publication number 85-23, revised 1985), and approved by the University of Ibadan ethical committee for the use of Laboratory animals. Inbred Swiss albino mice, weighing between 20-22g, aged 8-9 weeks, were used for all experiments. Animals were obtained from the animal house of the Malaria Research Laboratories, Institute for Advanced Medical Research and Training (IMRAT), University of Ibadan. The mice were housed in groups of five in plastic cages, fed with mouse cubes and provided with water ad libitum. The Peters' 4-day suppressive test was used for the *in vivo* drug tests [10].

Parasites

Chloroquine-resistant *Plasmodium berghei* (ANKA) strain used was obtained from the Malaria Research Laboratories, Institute for Advanced Medical Research and Training, College of Medicine, University of Ibadan. Parasitized red blood cells were obtained from donor-infected mouse by cardiac puncture in acid citrate dextrose (ACD) anticoagulant.

Animals

Seventy albino mice weighing 18-22 g were inoculated intravenously with 1×106 red blood cells infected with the CQ-resistant *P. berghei* ANKA strain. The infected animals were distributed randomly into 14 groups of 5 animals each and were treated with 50, 100, 200 or 400 mg/kg body weight of the hexane, dichloromethane and methanol extracts of GKS for 4 days. Two controls groups were used: one treated with chloroquine 10 mg/kg body weight given daily for 3 days while the second group of animals received corn oil (vehicle solution). Parasitemia was determined by microscopic examination of Giemsa–stained blood films obtained from the tail snips from each animal on day 4 after infection. The number of parasitized erythrocytes among 1000 RBC was counted and the percentage chemosuppression for each extract was calculated. Animal survival was monitored daily, until 30 days after infection.

1. Group I: Negative Control (received corn oil)
2. Group II: Positive Control (infected mice that received chloroquine 10 mg/kg body weight)
3. Group III-XIV: infected mice that received 50,100,200 or 400 mg/kg body weight of the hexane extract or dichloromethane extract or methanol extract of GKS

Cell viability assay

The Vero cells obtained from the kidney epithelial cells of the African green monkey were maintained in RPMI-1640 medium supplemented with 10% FBS, glutamine, penicillin (100 units/mL) and streptomycin (100 µg/mL). The cells were cultured at 37ºC in a humified 5% CO2 incubator. The cytotoxicity of the seed extracts of *Garcinia kola* was evaluated against vero cells using the MTT (3-[4,5-Dimethylthiazol-2-yl]2,5-diphenyltetrazolium bromide) assay as described by Mossman [11] and emetine, was used as a standar d cytotoxic agent. Briefly, the vero cells grown in standard tissue cult ure were plated at a density of 1x 106 cells/mL/well (100 µL) in to a 96-well plate. One hundred microliter (100 µL) of complete medium was also dispensed into the 96-well plate and cells were allowed to attach for 24 hours at 37°C. The medium was completely removed after 24 hours and replaced with 0.0001µg/mL of the extracts of *Garcinia kola* seeds. A blank containing only complete medium served as a control containing no drug. The plates were then incubated at 37°C in 5% CO2 for 48 hours. Thereafter, 25 µL of sterile MTT (5 m g/mL in PBS) was dispensed into each well and incubated for 4 hours at 37°C. Cell viability was measured at 540nm on a microtiter plate reader. Cell viability in the presence of the extract were compared t o that of the negative control. The fifty percent inhibitory concentrations (IC50) were calculated for the extracts and the positive con trol (emetine) using non-linear regression analysis. *In vitro* selectivity index was determined for each extract as the IC50 for Vero cells/ IC 50 for *P.falciparum.*

Statistical analysis

Graph Pad prism version 5.0 (Gra ph-Pad Software, San Diego, CA, USA) was used for all statistical analyses. Fifty percent inhibitory concentration (IC50) was calcula ted using non -linear regre ssion analysis. Chemosuppression of parasite growth and survival of animals were expressed as mean ± SEM. Statistical significance of means of different variables were analysed using Student' s t test and one -way analysis of variance between groups (ANOVA) was used to compare difference in percentage inhibition of parasite growth. For all statistical tests, $P<0.05$ was considered significant.

RESULTS

In vitro antimalarial activity

The *in vitro* antimalarial activities of the three seed extracts of *Garcinia kola* against the D10 strain of *P.falciparum* is presented on Table 1. The dichloromethane extract exhibited the highest *in vitro* antimalarial activity, with an IC50 value of 10.59±0.64 µg/mL while the hexane and the methanol extract produced moderate *in vitro* antimalarial activity with IC50 values of 12.93±0.88 and 25.65±1.25 µ g/mL against the D10 strain of *P.falciparum* respectively.

Table 1: Susceptibility profile of Chloroquine -sensitive *P. falciparum* D10 strain to seed extracts of *Garcinia kola*

Name of extract	IC50 (µg/mL)
Garcinia kola hexane	12.93 ±0.88
Garcinia kola dichloromethane	10.59±0.64
Garcinia kola methanol	25.65±1.25
Chloroquine	0.12±0.03

In vivo antimalarial activity

The *in vivo* antimalarial activity of the hexane, dichloromethane and methanol extracts of GKS against *P. berghei* ANKA strain in Swiss albino mice is presented on Table 2. Me an parasitaemia on day 4 in the untreated control animals was 13.43±0.65%, while mean parasit aemia on day in animals tre ated with selected doses (50 –400 mg/kg) of GKS extracts ranged from 4.5% to 16.9%. A dose -dependent chemosuppression of parasite growth was observed in animals treated with the hexane, dichloromethane and methanol extracts of GKS . The hexane extract of GKS produced the highest chemosuppression of 69.9% at a dose of 400 mg/k g, while Chloroquine completely suppressed parasitaemia on D4. At 400 mg/kg of the hexane extract of GKS tested, there was a significant percentage inhibition o f parasiteamia compared to the untreated control group ($P \leq 0.05$), with the longest survival time of 15 days. All the doses of the dichloromethane and methanol extract s of GKS tested did not produce significant chemosuppression of parasiteamia. However, 40 0 mg/kg of the dichlorometh ane extract of GKS, produced a mild chemosuppression of parasitaemia of 47.95%. It was also interesting to note that animals in that were tre ated with selected doses of the dichloromethane and methanol extract survived longer than the animals that were untreated.

Table 2: *In vivo* antimalarial activity of the seed extracts of *Garcinia kola* against chloroquine resistant *P.berghei* in Swiss albino mice

Dose mg/kg	Parasiteamia ± SEM (%)	Chemosuppression ± SEM (%)	Survival time (days)
GK HEX			
50	13.55±0.35	0.00±0.00	11.75±0.25
100	9.07±2.46	33.80±3.70	12.20±0.20
200	7.23±1.78	47.00±1.00	13.35±0.25
400	4.46±1.17	69.89±9.79	14.60±0.20
GK DCM			
50	11.12±0.24	17.50±2.00	9.70±0.70
100	8.69±0.93	35.50±7.50	12.65±1.15
200	8.83±0.79	34.30±6.29	13.10±2.20
400	7.00±0.35	47.95±2.75	16.20±1.20
GK MEOH			
50	16.91±0.79	0.00±0.00	9.70±0.50
100	12.11±2.85	9.90±0.30	12.50±0.10
200	10.68±2.61	21.05±0.75	13.50±0.30
400	8.74±2.45	36.35±4.25	14.60±0.20
C/Q 10mg/kg	0.00±0.00	100.00±0.00	31.50±3.50
Corn oil	13.43±0.65	0.00±0.00	10.60±0.20

CQ = Chloroquine diphosphate (10 mg/kg/day), Corn oil (Untreated control)
GK HEX= *Garcinia kola* hexane extract
GK DCM= *Garcinia kola* dichloromethane extract
GK MEOH = *Garcinia kola* methanol extract

Cytotoxicity activity and Selective indexes of the seed extract of *Garcinia kola*

The Cytotoxic activity of the hexan e, dichloromethane and methanol extracts of *Garcinia kola* seeds against vero cells are shown in Table 3. The IC50 values of the extracts agai nst vero cells ranged from 7.00 µg/mL to 76.78 µg/mL. The hexane extract of *Garcinia kola* seeds was the least toxic (IC50 = 76.78 ± 2.00 µg /mL) while the methanol extract was the most toxic (IC50 = 7.00 ± 0.52 µg/mL). The IC50

value of emetine, a standard cytotoxic agent which served as the positive control was 8.00 ± 0.60 µg/mL. High selectivity indices indicate a strong selective ability of an agent to destroy the malaria parasite. Selectivity index of the extracts of *Garcinia kola* seeds ranged between 0.27 and 5.94 (Table 3).

Table 3: *In vitro* cytotoxicity profile of the seed extracts of *Garcinia kola* against Vero cells

Extract	IC50 (µg/mL)	Selectivity index
Garcinia kola hexane	76.78 ±2.00	5.94
Garcinia kola dichloromethane	27.99±1.96	2.64
Garcinia kola methanol	7.00±0.52	0.27
Emetine	8.00±0.60	N/A

Selectivity index = IC50 (Vero) / IC 50 (D10), N/A = Not applicable

DISCUSSION

In the absence of an efficient and readily available vaccine for the prevention of malaria, chemotherapy still remains the main stay for the treatment of malaria. The emergence and spread of Artemisinin resistant parasites across Southeast Asia is a major setback in the progress made on a global basis in malaria chemotherapy [12]. One possible source for a replacement of the artemisinins might lie in nature based on the antecedence of antimalarial drug discovery. Ethnomedicine has produced two major antimalarial agents: Quinine the drug of choice for the treatment of malaria for several decades was sourced from plants called *Cinchona calisaya* and *Cinchona Succirubra* and Artemisinin from the plant called *Artemisia annua* [4, 13]. This has necessitated the search for newer and more potent antimalarials from plant sources. In this study, efforts were directed at evaluating the antimalarial potential and the cytotoxicity profile of *Garcinia kola* seeds.

Garcinia kola is an angiosperm belonging to the family Guttifereae/Clusiaceae. It is a highly valued ingredient in African ethnomedicine because of its varied uses which include medicinal and social uses. Results from this study indicate that the hexane, dichloromethane and methanol extracts of *Garcinia kola* seeds possess good to moderate *in vitro* antimalarial activity, however, only the hexane extract of *Garcinia kola* seeds demonstrated the highest activity *in vivo* and was against the asexual erythrocytic stages of *P. berghei.* The exact reason for this is not fully understood however, various factors such as first pass effect, poor absorption and route of administration of the extracts may have influenced the observed activity of the extract. The hexane extract of *Garcinia kola* seeds was observed to show good intrinsic *in vitro* and *in vivo* antimalarial activity judging by the inhibitory concentration value obtained and its percentage chemosuppression *in vivo* in comparison with that of chloroquine, although chloroquine had a better activity in *vitro* and *in vivo,* which could be due chloroquine's purity and the extracts crude nature.

It is interesting to note that the hexane and dichloromethane extracts of *Garcinia kola* seeds were found to be non-cytotoxic to normal monkey epithelial cells. The ability of the hexane extract of *Garcinia kola* seeds to destroy *P. berghei* parasites in Swiss albino mice and cause no harm to the vero cells, which are normal epithelial cells of the African green monkey is an its indicator of selective toxicity, and as such can be considered as potential lead for clinical management of malaria. In contrast, the cytotoxicity of

the methanol extract of *Garcinia kola* seeds was comparable to emetine, the standa rd cytotoxic drug used. This finding suggests that the methanol extract of *Garcinia kola* seeds may have potentially useful anticancer properties.

CONCLUSION

The hexane extract of *Garcinia kola* seeds showed *in vitro* and *in vivo* antimalarial activity and was non-cytotoxic to vero cells, justifying its use in folklore for the treatment of febrile illnesses. There is however a need to purify the hexane extract of *Garcinia kola* seeds in order to identify the compound (s) responsible for the observed antimalarial activity, which could serve as templates or leads for the development of new alternatives to the artemisinins.

REFERENCES

1. Fairhurst RM, Dondorp AM. Artemisinin -resistant *Plasmodium falciparum* malaria. Microbiology Spectrum. 2016; 4(3):10-13.
2. Kingston DGI, Cassera MB, Su Q, Du Y, Presley C, Dalal S, Goetz M. Discovery and biology of novel antimalarial agents from plants. Planta Medica. 2016; 82:S01-SL31.
3. Buba CI, Okhale SE, Muazzam I. Garcinia kola: The phytochemistry, pharmacology and therapeutic applications. International Journal of Pharmacognosy. 2016; 3(2):67-81.
4. Ogbadoyi EO, Kabiru AY, Omotosho RF. Preliminary studies of the antitrypanosomal activity of *Garcinia kola* nut extract in mice infected with *Trypanosoma brucei* brucei. Journal of Medicine and Medical Sciences. 2011; 21: 628-631.
5. Okhale SE, Buba CI, Oladosu P, Egharevba HO, Ugbabe G, *et al.* Chemical constituents and antimicrobial activity of the leaf essential oil of *Garcinia kola* Heckel (Clusiaceae) from Nigeria. American Chemical Science Journal. 2016; 13(4):1-7.
6. Trager W, Jensen JB. Human malaria parasites in continuous culture. Science. 1976; 193(4254):673-675.
7. Makler MT, Hinrichs DJ. Measurement of the lactate dehydrogenase activity of *Plasmodium falciparum as an* assessment of parasitemia. American Journal of Tropical Medicine and Hygiene. 1993; 48:205-210.
8. Peters W, Portus JH, Robinson BL. The chemotherapy of rodent malaria, XXII: the value of drug -resistant strains of *P.berghei* in screening for blood schizontocidal activity. Annals of Tropical Medicine and Parasitology. 1975; 69(2):155-171.
9. Mossman T. Rapid colorimetric assay for cellular growth and survival: application to proliferation and cytotoxicity assays. Journal of immunological methods. 1983; 65(1 2):55 63.

Correspondence:

Abah Victor Itoa

(Researcher)

abahitoa@gmail.com

ECOSPHERE CONSERVATION FOUNDATION
RC: 183030

RC:183030

ECOSPHERE CONSERVATION FOUNDATION

Preservation of wild life and Conservation

Address: Oduduwa Crescent, Off Dasuki Road, Phase2, Site 2, Kubwa Abuja.

Tel: +234706995019
+2348034486120
+2347047245279
P. M. B:1198

ecosphereconservationfoundatio@gmail.com
website:http//ecoscon.org

Our Ref:..... Your Ref:.....

BUDGET SUMMARY, for the domestication of Garcinia Kola for Kola for the treatment of malaria and multiple human illnesses

Requested amount: CHF 220,000.00

Total project amount:CHF440,900.00

Project time frame: 5th March 2024-5th March, 2026

CURRENCYWILLBE IN SWISS FRANCS

1. Acquisition of at least 25 hectares of landfor the propagation of GARCINIA KOLA and making sure our seedlings in a nursery can carry the project - CHF 110,000

2. Propagation of at least five Thousand (5,000)GARCINIA KOLA seedlings for the pilot of the nursery that will be monitored by Ecospheric Conservation Foundation for the life cycle of Garcinia Kola. - CHF 1,000

3. Polythene Bags for the seed nursery - CHF 2,000

4. Landscaping and Grading of site their planting site as Ecosphere Conservation Foundation will be observing and keeping data on the development of the nursery. - CHF 8,000

5. Nursery will be control by security and nursery workers. - CHF 5,500

6. Ecospheric Conservation Foundation will make sure the nursery has access to water for their farms/nursery. - CHF 5,000

7. Provision of Constant check by sta ffof Ecospheric Conservation Foundation/Feeding & Transportation etc. - CHF 20,000

8. F ive Hundred bags of organic fertilizer to provide the needed moisture and pH level for the soil to ensure proper growth and crop yield for the production. - CHF 5,000

9. Employment of One Hundred and Forty (140) CHF22,000 annually TO MONITOR THE NURSERY - CHF 35,000

10.Movement Of Staff And Their Health Care. - CHF 8,000

11. Overhead/Indirect Cost - CHF 20,000

Total Budget - CHF 351,500

Signed:

Chairman
AbahVictorItoa

ECOSPHERE CONSERVATION FOUNDATION RC: 183030

Signed:

Project Manager
ObiechinaNwankwo