



Food AS

MEDICINE

***FOOD AS MEDICINE : A NEW
LEASE ON LIFE***

Maurice M. Iwu, Ph.D.

BIORESOURCES DEVELOPMENT GROUP

- “Let thy food be thy medicine and thy medicine be thy food.” – Hippocrates, father of modern medicine

Phytochemicals

- Plants contain compounds called phytochemicals, which have protective or disease preventive properties, beneficial catalytic role in human metabolism, catabolism and anabolism.

Phytochemicals

- Thousands of phytochemicals occur in food plants:
- Lycopene in tomatoes, isoflavones in soy and flavonoids in fruits, the carotenoids found in carrot and red palm oil, diterpenes and sesquiterpenes in spices, alkaloids and phytosterols in vegetables, and even the ubiquitous chlorophyll found in all green plants.

NUTRACEUTICAL

- “Any substance that may be considered a food or part of a food and provides medical or health benefits including the prevention and treatment of disease”
- Foundation for Innovation in Medicine (New York, US)

Major Characteristics

- ☞ Not pharmacotherapeutic
 - ◆ Acts mainly at cellular or tissue level
- ☞ Not **Herbal Medicine** though may be of plant origin;
- ☞ Not **Traditional Medicine**, though may be part of a cultural cuisine

- ☞ Should be generally safe but effective over time

BDCP - Founded in 1992



- ***A partnership of academic institutions, scientists, policy experts and industry***
- ***Linking biodiversity, health and economic development of rural areas***
- ***Create a value chain from Farm to Lab to the Market***
- ***Boundary Organization promoting partnerships between industrialized countries and developing countries' institutions in biosciences.***

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Development Group (c)***

2013

BIORESOURCES DEVELOPMENT GROUP

DRUG DEVELOPMENT

International Centre for
Ethnomedicine and Drug
Development (**InterCEDD**)

InterCEDD Health Products

Axxon Biopharm

BDG

Biodiversity CONSERVATION

BDCP

Community Forest

Bioprospecting

Environmental
Education

Ecology



SUSTAINABLE DEVELOPMENT

Agrotechnology

Trust Funds (**FIRD**)

Medicinal & Aromatic Plant Farms

BioTrade Initiative

EDUCATION & OUTREACH

Bioresources Institute of Nigeria (2011)

Publications

Seminars/workshops

Conferences

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Bioresources Development Group

➤➤➤➤ Mission

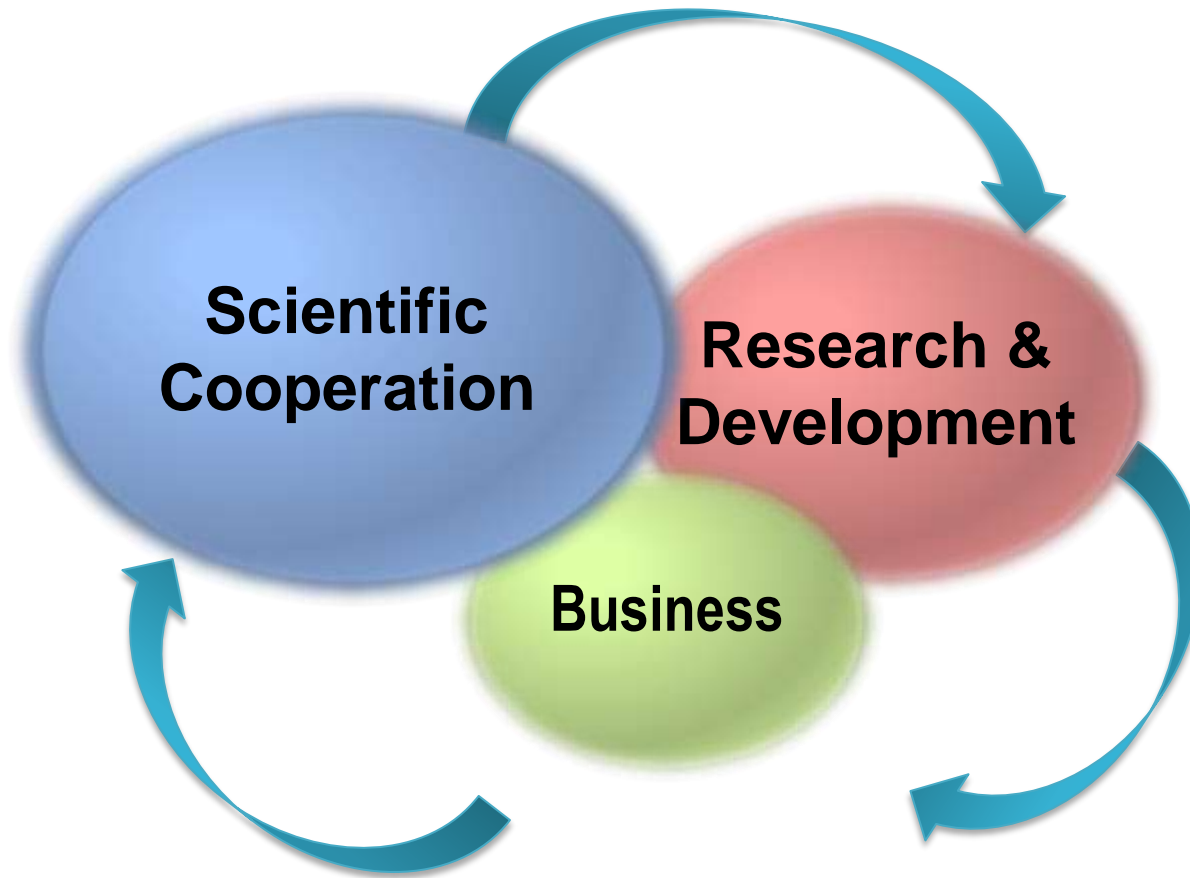
To promote sustainable utilization of African biological resources for health, economic development and conservation of the biodiversity and develop partnerships with agencies, communities and governments for sustainable development.

➤➤➤➤ Vision

A globally recognized knowledge-creating organization that facilitates the sustainable utilization of natural products for socio-economic development and conservation of the environment.



INTEGRATED TRIPLE-HELIX APPROACH



BDG

BIORESOURCES DEVELOPMENT GROUP



BIORESOURCES DEVELOPMENT
& CONSERVATION PROGRAMME



BIORESOURCES INSTITUTE OF NIGERIA



INTERCEDD HEALTH PRODUCTS



InterCEDD Laboratories

BIOTRADE
GLOBAL AGENCY LTD



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Bioresources Development Group

- ***Bioresources Institute of Nigeria (BION)*** - promotes high quality scientific research and training on sustainable utilization of biological resources for health, economic development and conservation of the environment.
- ***InterCEDD*** - an international grade laboratory that specializes in standardization and analysis of herbal medicine and natural products.
- ***InterCEDD Health Products*** is a Phyto-Pharmaceutical company that manufactures and markets standardized natural products and medicines.
- ***BioTrade Global Agency*** is a commodities trading company that specializes in sourcing and supplying high grade raw materials (both processed and unprocessed) to the international market. It links small-scale farmers to the global market.
- ***BDCP Limited*** is a limited liability company established as the commercial arm of BDCP.
- **Natures's Emporium** – Supermarket for Dietary Supplements, herbs, Phytomedicines, vitamins etc.

PHYTOMEDICINE & NUTRACEUTICALS

- ❑ CHRONIC CONDITIONS, e.g. Diabetes, Hypertension, Arthritis etc. – mainly due to cellular degeneration by oxidative stress
- ❑ OBESITY
- ❑ AGING COMPLICATIONS
- ❑ Mental Health

ANTI-INFLAMMATORY AND ANTI-ARTHRITIC

1. Prevention and amelioration of chronic inflammation plays a pivotal role in the maintenance of optimum health. Chronic inflammation results in the excess production and release of several endochemicals such as, eicosanoids, C-reactive protein (CRP), tumor necrosis factor alpha, nuclear factor kappa-B, interleukins, cyclooxygenases, and lipoxygenases.

ANTI-INFLAMMATORY AGENTS

- ☞ The balance between pro- and anti-inflammatory agents can be distorted, which leads to persistent inflammation sometimes caused by even low levels of pro-inflammatory chemicals over a long-time. The result is illness and certain diseases, including cardiovascular, cancer and arthritis. Ginger (especially aged roots), bitter kola (*Garcinia kola*), turmeric, Moringa, liquorice, garlic and basil are among the food substances with proven anti-inflammatory properties.

Neurodegenerative Diseases

- Multiple factors are involved in the development of various neurodegenerative diseases, including Alzheimer's diseases, Parkinson's disease, multiple sclerosis, brain tumor, and meningitis. Chronic inflammation and oxidative imbalance are considered key components in the pathogenesis of such diseases.

Neurodegenerative Diseases -2

The observed differences in the incidence of neurodegenerative diseases in different countries with markedly different dietary habits gave the first indication that food and environmental factors have a role in prevalence status of these diseases. Spices, antioxidants, small-chain fatty acids (eg VCO, aromatic oils) are beneficial in prevention of NDD.

Anti-Aging

👉 Human tissues with time degrade and the cells lose their ability to regenerate themselves. It has now been established beyond reasonable doubt that certain Nutraceuticals can prevent organ senescence associated with aging to produce new cells and stimulate the production of hormones that decreases with aging.

ANTI-AGING AGENTS

- ➔ Among the best known are the glucans found in the mushroom, *Cordyceps sinensis*, (syn.: *Cephalosporium sinensis*), which occurs naturally as an endoparasitic fungus that grows from the head of a subterranean caterpillar; *Ganoderma lucidium*; *Panax ginseng*; *Andrographis*, and antioxidants.

CORDYCEPS





Cordyceps Cs – 4 Mushroom plus fruit anti-oxidants



☞ Adaptogen

☞ Pre-mature ageing

☞ Restores normal
body functions

Ganoderma lucidum spores +



- ☞ Immune system booster
- ☞ Ameliorates chronic metabolic diseases
- ☞ Anti-inflammatory
- ☞ Restores normal endocrine functions

Okra

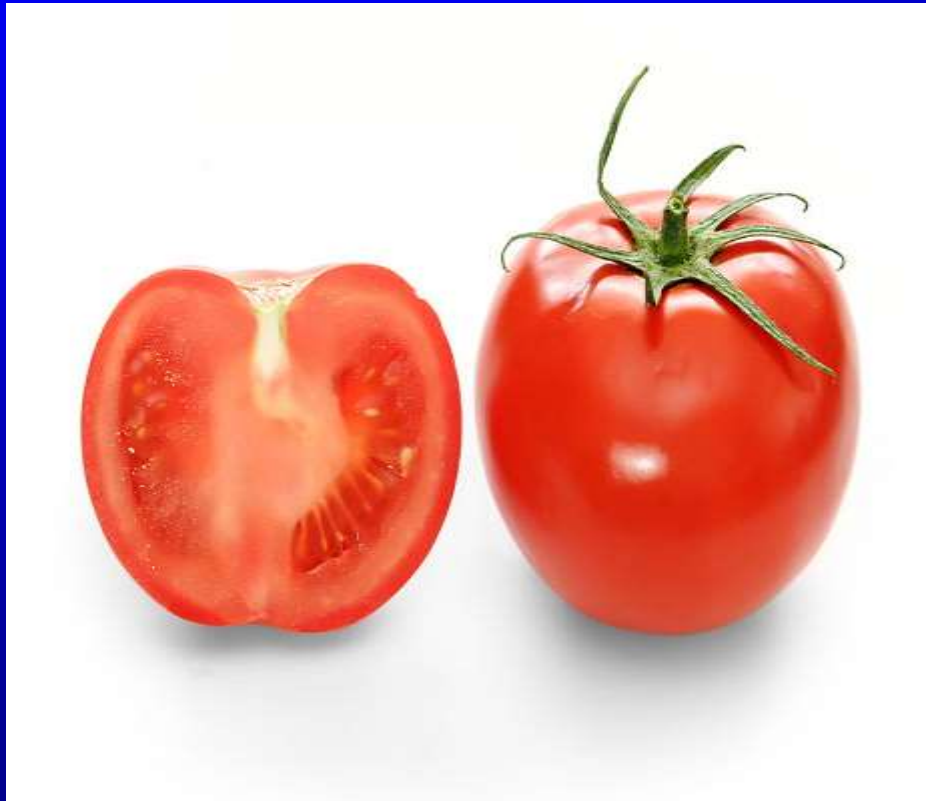
Abelmoschus esculentus Moench



- ☞ Okra mucilage has been used as a plasma replacement. The mucilage in okra binds cholesterol and bile acids that are carrying toxins produced by the liver.
- ☞ Anti-oxidant, rich in minerals and vitamins

Tomatoes

Solanum lycopersicum



- Lycopene and b -carotene are the tomato carotenes which present the highest nutritional value. Specifically, lycopene reduces several cancer types and the risk of heart attack.
- It is useful in preventing prostate enlargement

OGBONO

Irvingia gabonensis



Weight loss remedy
in Europe and
America – as
African Bush
Mango

OGBONO - Irvingia



- 👉 Highest selling anti-obesity medicine
- 👉 Differentiation between 'ado' and 'ugiri' varieties?

PIGEON PEA

Cajanus cajan



☞ Ciklavit – Neimeth International Pharmaceuticals for Sickle-Cell Disorder

Ciklavit*

improves the well being of people living with
Sickle Cell Disorder



PIGEON PEA

Cajanus cajan – anti-sickling activity
based on aminoacids and proteins

BITTER LEAF & SCENT LEAF VERNONIA & OCIMUM



Antidiabetic, anti-cholesterol

ZOBO – *Hibiscus sabdarifa*



- ☞ Refreshing drink full of vitamins and minerals
- ☞ Antihypertensive
- ☞ Mild Anti-Cholesterolemic

Garcinia kola Seeds



- Respiratory tract infectious
- Anti-inflammatory
- Antiviral
- Tonic

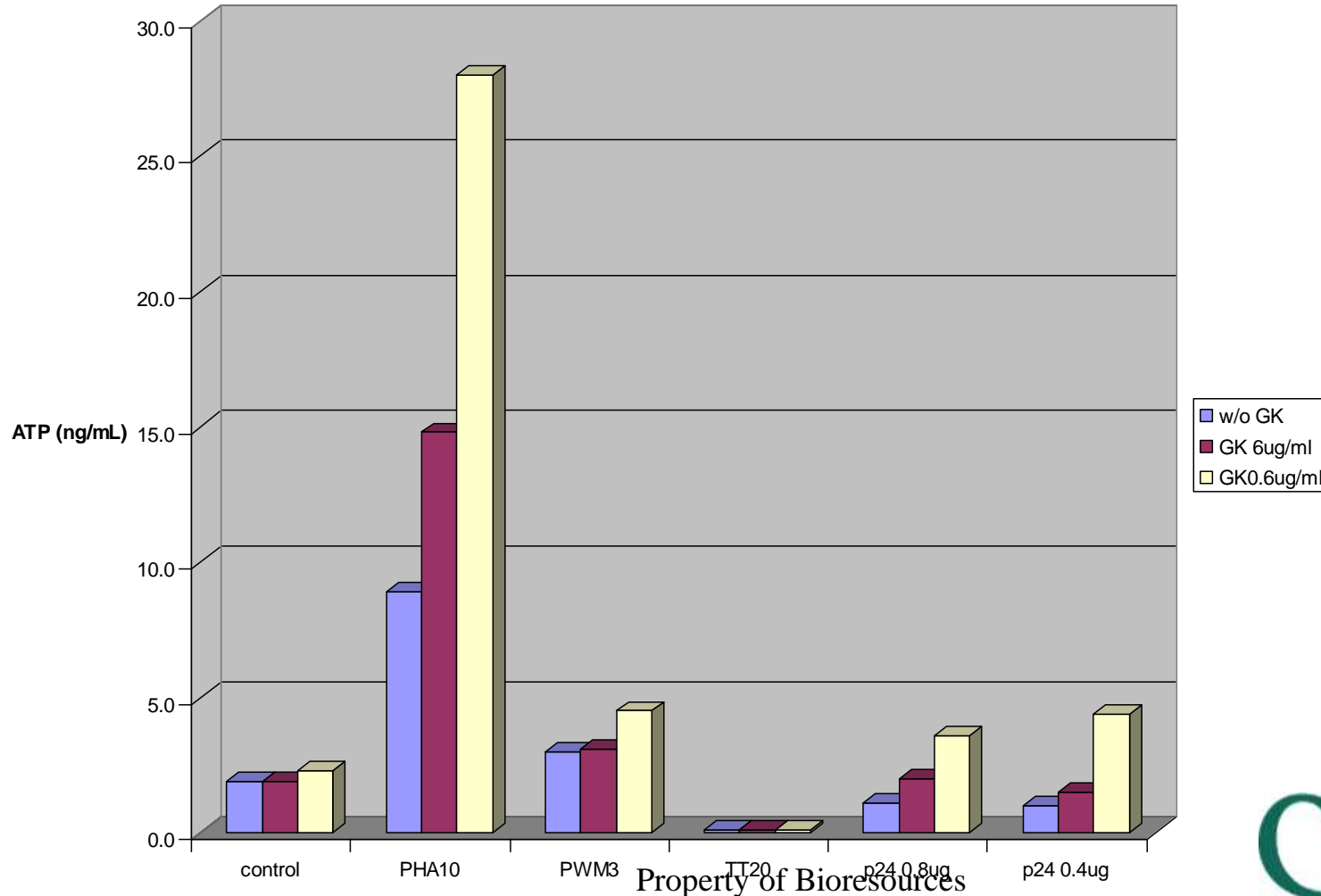
Garcinia kola - Pharmacology

- Anti-inflammatory
 - Anti-microbial
 - Anti-viral
 - Anti-oxidant
- Immunomodulator
 - Anti-hepatotoxic

Positive Clinical Outcome Studies

- ➡ ANTIVIRAL: Hepatitis, Flu virus
- ➡ ANTI-INFLAMMATORY: Laryngitis
- ➡ ANTIDIABETIC
- ➡ ANTI-HEPATOTOXIC: alcohol liver damage

Garcinia kola enhanced ATP response in lymphocytes from HIV infected patient



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world > africa > story page

Africa-born scientist says plant may be Ebola cure

August 3, 1999
Web posted at: 5:28 PM EDT (2128 GMT)

ST. LOUIS (Reuters) -- Compounds found in a plant used by West African faith healers stopped the spread of the deadly Ebola virus in lab tests and may be effective against the flu, a scientist told a botany conference on Tuesday.

The *Garcinia kola* plant, whose seeds are often included in welcoming food baskets in Africa where it grows wild, contains compounds with two flavonoid molecules fused together that scientists believe halted the spread of Ebola in tests.

"This is a very exciting discovery. The same forest that yields the dreaded Ebola virus could be a source of the cure," Maurice Iwu, founder of the London-based Bioresources Development and Conservation Program, told the International Botanical Congress.

Flavonoids, which can be found in tea and in wine, are known to neutralize harmful chemicals that damage cells and can lead to illnesses such as heart attacks, strokes and cancer.

Iwu, who was born to a family of healers in Nigeria and trained in pharmacology, was led to the plant by traditional healers who said it had been eaten for thousands of years. Iwu said the compounds were nontoxic in animal tests.

The plant's flavonoid compounds that were believed to offer the healing powers could form the basis for drugs in a few years, he said. Tests on some compounds from the plant were also effective against some strains

Best UP TO BARNI

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Thursday, August 5, 1999 Published at 14:34 GMT 15:34 UK

Health Ebola cure hope



Four out of five people who get infected die

A plant has been found to halt the deadly Ebola virus in its tracks in laboratory tests, scientists have said.

Feedback
Low Graphics
Help



The extract can be eaten or rubbed into the skin

They used a compound from *Garcinia kola*, a plant commonly eaten in West Africa. Compounds from the plant have also proved effective against some strains of flu.

If the anti-Ebola compound proves successful in animal and human trials, it will be the first medicine to successfully treat the virus that causes Ebola haemorrhagic fever - an

often-fatal condition.

The discovery was announced at the 16th International Botanical Congress in St Louis in the US.

Four deaths per five cases

The Ebola virus was first documented in 1976 after an outbreak in Zaire - now the Democratic Republic of the Congo - where 88% of the 318 human cases died.

Health Contents

- Medical notes
- Background Briefings

Relevant Stories

- 12 Feb 98 | Sci/Tech
Life-saving hope from killer virus
- 14 May 99 | Health
Ebola-like virus 'under control'
- 04 Feb 99 | Health
Chemical key to health
- 15 Jan 99 | Africa
Fighting back at ebola
- 08 Mar 98 | World
Early warning plan for killer diseases

Internet Links

- Ebola facts - WHO
- Ebola and Marburg viruses

The BBC is not responsible for the content of external internet sites.

In this section

- From Sci/Tech
First reports of eclipse eye damage
- Patients prepared to pay for doctor
- Small fall in waiting lists
- Ibiza Legionnaires' scare hits Britons
- Holidaymakers take health risks
- Holland edges towards legal euthanasia
- Threat to remote 'hilling' heart doctors

I O H O P

INTERCEDD HEALTH PRODUCTS

GARCINIA IHP

IMPROVES METABOLISM
IMMUNE BOOSTER



BACKED BY SCIENTIFIC RESEARCH

The Moringa Tree

Moringa oleifera



Varieties

Thirteen Moringa species are known:

M. oleifera

M. arborea

M. borziana

M. concanensis

M. drouhardii

M. hildebrandtii

M. longituba

M. ovalifolia

M. peregrina

M. pygmaea

M. rivaie

M. ruspoliana

M. stenopetala



Tiny leaves.

Enormous Benefits.

=

7 times the Vitamin C of Oranges



4 times the Vitamin A of Carrots



4 times the Calcium of Milk



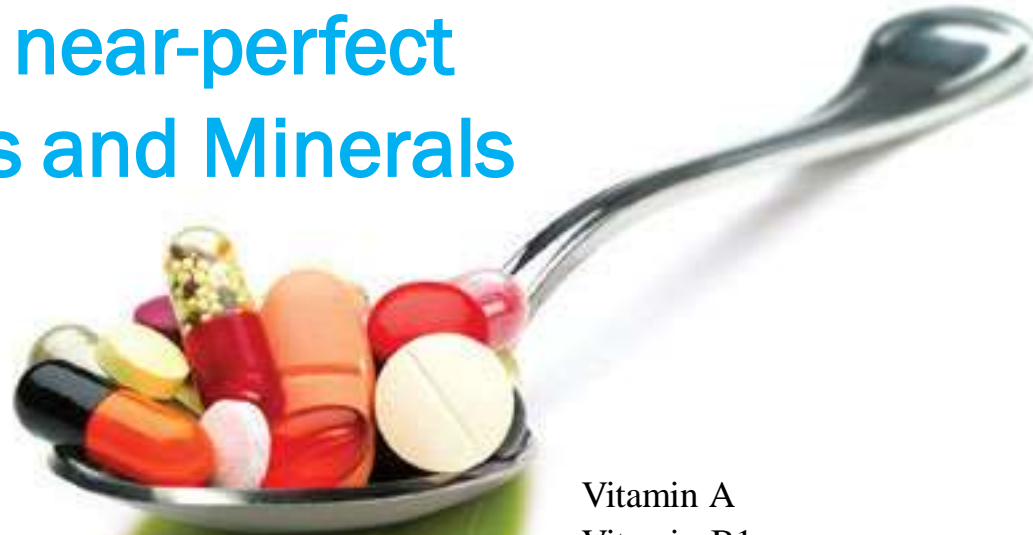
3 times the Potassium of Bananas



2 times the Protein of Yogurt



Moringa has a near-perfect mix of vitamins and Minerals



Vitamin A
Vitamin B1

Vitamin B2

Vitamin B3

Vitamin C

Calcium

Chromium

Copper

Iron

Magnesium

Manganese

Phosphorus

Potassium

Protein

Zinc

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**Moringa leaves contain all
the essential amino
acids...**

**Including *argenine* and
histidine – two amino
acids especially important
for infants. Rare in plants.**

Leaves:
Nutrition
Medicine



Trees:
Alley Cropping
Erosion Control



Flowers:
Medicine



Pods:
Nutrition
Medicine



Consider the Possibilities



Roots:
Medicine



Seeds:
Water Purification
Medicine
Oil



Gum:
Medicine



Bark:
Medicine

- Human Health
- Livestock Fodder
- Plant Growth Enhancer
- Biogas
- Water Purification

Adaptogens – coping with stress

- *Bitter kola* belongs to a unique group of plants that help organisms to adapt to stress and have the ability of influencing multiple regulatory systems responsible for stimulus-response coupling such as the immune system and act also as a general anti-infective agent.

Adaptogen 2

- *Increase concentration, performance and endurance during fatigue.*
- *Prevents oxidative stress and premature 'tissue-ageing'.*
- *Stimulate Endocrine Functions*

MEDICINAL MUSHROOMS

Pleurotus tuber-regium (Orsu) - King Oyster Mushroom

© lignosus@yahoo.com



- Soup Thickener
- Anti-diabetic
- Antioxidant
- Anti-Cholestrolemic

Virgin Coconut Oil - VCO



- ➔ Virgin coconut oil prepared from fresh coconut, different from copra or coconut oil used in cosmetics which is derived from the dried nuts

Mucuna pruriens



☞ Male Erectile Dysfunction

☞ Parkinson's Disease Management

Guava – *Psidium guajava*



- ☞ Leaves –
Antidiarrheal
- ☞ Antioxidant
- ☞ Antispasmodic
- ☞ Cardioactive
- ☞ **Antidiabetic**
- ☞ **Antiinflammatory**

Ginger



- ☞ Indigestion
- ☞ Inflammation, arthritis
- ☞ Antimicrobial
- ☞ Gastro System Disorder
- ☞ Cardiovascular diseases

Sour-Sop – *Annona muricata*



☞ Refreshing juice

☞ Cancer
chemopreventive

☞ Antiinflammatory

Dawa-Dawa – *Parkia biglobosa*



- ☞ Seeds are
antioxidant
antihypertensive
- ☞ Leaves are
antihypertensive
- ☞ Fermented seeds
used as soup
flavoring agent

Guinea Corn - *Sorghum bicolor*



- ☞ Highly Nutritious – Rich in proteins and amino acids
- ☞ Two proprietary products for sickle-cell anemia are based on the chelation of the sheath poly-phenols with suitable metal.
- ☞ Phyto-Erythropeotin -K

Baobab - *Adansonia digitata*



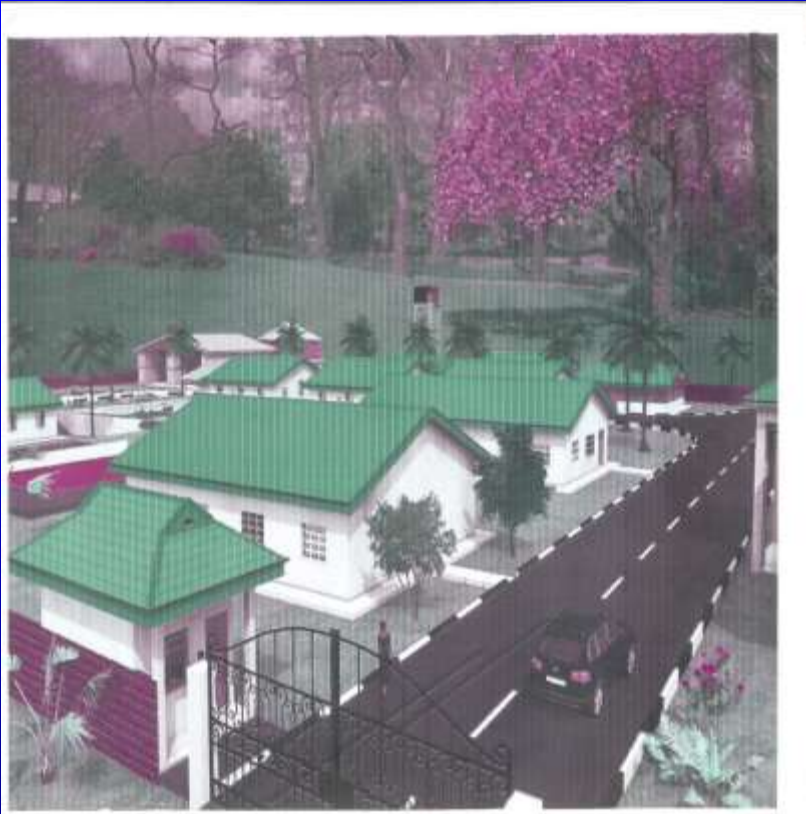
- Analgesic, antiinflammatory
- Anttviral
- Antioxidant
- Energy drink
- Rich in vitamins and minerals
- Cosmetics

Tumeric - *Curcuma longa*



- Arthritis
- Inflammation
- Antidepressant
- Immune Stimulant
- Antioxidant
- Gastro System Dysfunction

BION - UMUNA



☞ Processing Centre



I H O P
INTERCEDD HEALTH PRODUCTS



MORINGA LEAF POWDER

NATURE'S MIRACLE PLANT



50g X 1 Sachet of Moringa Leaf Powder

Property of Bioresources Development Group

(c) 2013

I HOP

INTERCEDD HEALTH PRODUCTS

MORINGA SEED POWDER

NATURE'S MIRACLE PLANT



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60g X 1 Sachet of Premium Qua

Nigerian Fruit Diversity – Potential Health Drinks



HEADLINES > INDUSTRY

NEWS IN BRIEF

Pepsi launches Baobab Cola in Japan

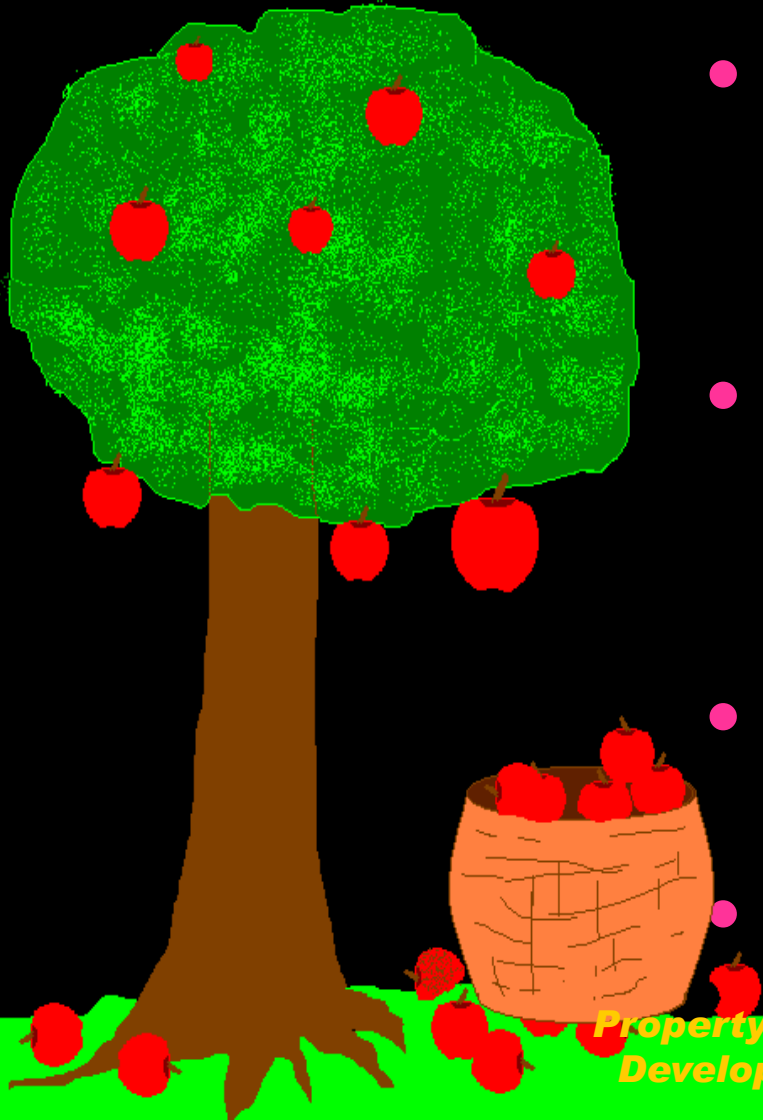
23-Jun-2010

Related topics: Industry

Pepsi has launched a limited release version of Pepsi Baobab in Japan to join its exotic range that includes Pepsi Cucumber.

Baobab is said to have weight management benefits but the product marketing is less specific, stating, *“a cola with a liberating and refreshing flavour, taking as its motif the baobab tree that towers over the vast African continent.”*

Money does grow on trees and in forests too !!!



- Genetic resources
 - Genetic resources & products thereof: US\$ 500 – 800 bn /yr.
- Eco-agriculture
 - Organic food & beverage: US\$ 40 bn/yr., growth rate 10-40% (US., EU, Japan)
- Dietary Supplements
 - US\$ 65 bn/yr (2011)
- Ecotourism
 - Important niche market: US\$ 260 bn/yr.

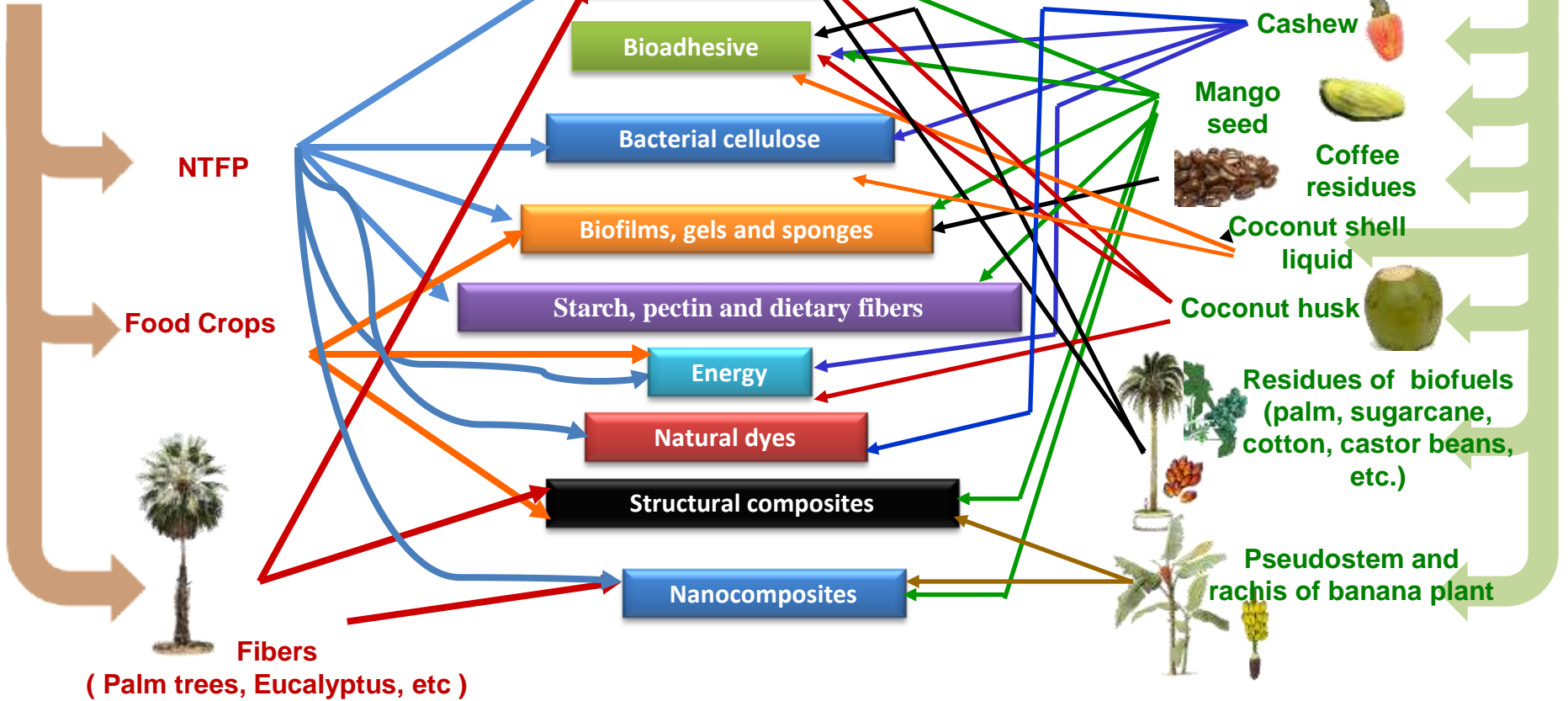
MEDICINAL PLANT DOMESTICATION

- ☞ *Andrographis paniculata*
- ☞ *Withania somniferum*
- ☞ *Echinacea purpurea*
- ☞ *Ocimum basilicum*
- ☞ *Coleus forskolii*

Adding value to raw materials from biodiversity and residues from regional agribusiness

Add value to biomass raw materials from Nigerian biodiversity with agroindustrial potential

Add value to residues from Nigerian agribusiness



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Bioresources Development Group

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