

NEWS.

More herbal cures for cancer validated

Written by CHUKWUMA MUANYA



Scientists have enlisted more local plants for the effective treatment of cancers. Top on the list are African pepper, goat weed, bitter leaf, cannabis, scent leaf, sour sop, sausage tree, and pawpaw leaf. CHUKWUMA MUANYA writes.

THE death of former Information Minister and Director General of the National Agency for Food and Drug Administration and Control (NAFDAC), Prof. Dora Akunyili, after a long battle with ovarian cancer, has led to renewed calls for more research into effective treatments for cancers.

Indeed, in recent times, more Nigerians are coming down with different kinds of cancers. The situation has been blamed on exposure to chemicals especially crude oil, unhealthy lifestyles, and genetic mutation.

However, this disease that is believed to cause at least 13 per cent of all deaths worldwide has no conventional cure, but palliatives. Some of the known treatments such as chemotherapy and radiotherapy have been shown to have serious side effects.

But more natural products have shown promise in preventing, treating and managing cancers without adverse side effects.

A study titled "Ethnobotanical Survey of Anti-Cancer Plants in Ogun State," published recently in *Annals of Biological Research* by scientists from Olabisi Onabanjo University, Ago-Iwoye, Ogun State, concluded: "Results from this work revealed that quite a number of plant parts from the 73 species especially the leaves, roots, barks and seeds have been found efficient in the management of cancer.

"However, the prominent plant species in the recipes are: *Xylopia aethopica*, *Garcinia kola*, *Kigelia africana*, *Anthocleista djalensis* and *Citrus* and *Allium* genera, which are indicative of their importance in the management of the disease. Similarly, Leguminosae and Liliaceae families occurred more frequently in the list of plants identified but the occurrence of other families also suggest the importance of all those families as repository of useful chemical compounds which may be explored for drugs in the management of cancer.

"In orthodox medicine, cancer can be treated with drugs and radiotherapy if detected early. Otherwise surgical operation is used at some stage after which it can become very difficult and hopeless. However, nature has some remedy for cancer patients. Some substances have been found to be anti-carcinogenic, that is they fight cancer forming cells and help to eliminate them from the body, for example cumaric acid and lycopene which are found naturally in tomatoes fruits (*Lycopersicon esculentum* L.) and the leaves of bitter leaf (*Vernonia amygdalina* Del.). Also, a lot of research has been and is still being done on the effectiveness of *Aloe vera* (L.) Burm.f., *Morinda lucida* Benth, *Nymphaea lotus* L. and *Pycnanthus angolensis* Welw. Warb. for managing cancer.

"Literature has revealed that most of the synthetic drugs that have been used in the past have negative effects that were of grave consequence in some cases, especially when taken by patients on self prescription after an initial visit to the physician. For this reason, it is imperative for ethnobotanists and pharmacognosists to do more analysis on the 73 wonderful plants mentioned in this work. Our medical health practitioners should also focus attention on more intense research on medicinal plants, which can save the life our people without side effects.

"Formulation of the dosage of the extracts from the recipes must be strictly adhered to for maximum efficacy and also the avoidance of over dosage which may lead to other complications in patients. One major advantage of Traditional medicine is that, it is cheaper than orthodox medicine. While drugs alone are not the only means of providing health care, they do play an important role in protecting, maintaining, and restoring the health of people.

"Information gathered from the herbalists shows that increasing number of people are turning to the use of anti-cancer which shows that they are effective and efficient in the management of cancer.

"According to Olapade, traditional medicine has higher benefits than any other health care system as it is cheaper, readily available and could cure permanently. Apart from this, it has no side effect and is capable of saving for the nation, huge foreign exchange, which can be used for other development programme.

"The vulnerability of medicinal plants to over exploitation and extinction needs to be dealt with seriously. Issues relating to the conservation of these medicinal plants should be addressed by the government and non-governmental organizations. Conservation methods such as In-Situ and Ex-Situ should also be adopted to protect our natural biodiversity."

Previous studies had enlisted: scent leaf (*Ocimum gratissimum*), bitter leaf (*Vernonia amygdalina*), sausage plant (*Kigelia africana/pinnata*), pawpaw/papaya (*Carica papaya*), and cannabis/marijuana (*Cannabis sativa*).

Earlier studies suggest that eating food prepared with African pepper and other spices and goat weed can prevent cancer. German and Camerounian researchers following laboratory experiments conducted at Johannes Gutenberg University Mainz (JGU), Germany have concluded that African medicinal plants contain chemicals that may be able to stop the spread of cancer cells.

The study was published last year in the journal *Phytomedicine*. The researchers said the plant materials would now undergo further analysis in order to evaluate their therapeutic potential. Prof. Thomas Efferth of the Institute of Pharmaceutical Sciences and Biochemistry – Therapeutic Life Sciences at Mainz University said: "The active substances present in African medicinal plants may be capable of killing off tumor cells that are resistant to more than one drug. They thus represent an excellent starting point for the development of new therapeutic treatments for cancers that do not respond to conventional chemotherapy regimens."

Nigerian and Chinese researchers have also in a study published recently in *Pharmacognosy Magazine* showed that *Ageratum conyzoides* (goat weed) possessed anticancer and antiradical properties in most cancer cell lines. The cancer cell lines include: Human non-small cell lung carcinoma (A-549), human colon adenocarcinoma (HT-29), human gastric carcinoma (SGC-7901), human golima (U-251), human breast carcinoma (MDA-MB-231), human prostate carcinoma (DU-145), human hepatic carcinoma (BEL-7402), and mouse leukemia (P-388) cancer cell lines.

The study is titled "Anticancer and antiradical scavenging activity of *Ageratum conyzoides* L. (Asteraceae)." In another study published recently in *Phytotherapy Research*, Nigerian and Indian researchers concluded: "These results indicate that *Xylopiya aethiopyca* (African pepper) fruit extract (XAFE) could be a potential therapeutic agent against cancer since it inhibits cell proliferation, and induces apoptosis and cell cycle arrest in human cervical cancer cell line C-33A."

The study is titled "Anti-proliferative Action of *Xylopiya aethiopyca* Fruit Extract on Human Cervical Cancer Cells."

Also, French and Cameroun researchers have confirmed the confirmed the cytotoxic activity of *Xylopiya aethiopyca* extract against a panel of cancer cell lines and identified the main compound responsible for this cytotoxic effect: ent-15-oxokaur-16-en-19-oic acid (EOKA).

The study published in *Cell Division* is titled "Characterisation of the anti-proliferative activity of *Xylopiya aethiopyca*."

Xylopiya aethiopyca

Xylopiya aethiopyca, commonly called African pepper or Guinea pepper belongs to the family Annonaceae. In Nigerian, it is called kyimba in Arabic, kumba in Arabic-Shuwa, kenya in Bokyi, akada in Degema, unie in Edo, ata in Efik, kimbaahre in Fula-Fulfulde, kimbaa in Hausa, ata in Ibibio, uda in Ibo, tsunfyanya in Nupe, kimbill in Tera, eeru in Yoruba.

Xylopiya aethiopyca, a plant found throughout West Africa, has both nutritional and medicinal uses. The cloves of the plant *Xylopiya aethiopyca*, a member of the custard apple family, Annonaceae, are used as a spice in various traditional dishes of Western and Central Africa. The plant is also used in decoction to treat dysentery, bronchitis, ulceration, skin infection and female sterility.

According to *The Useful Plants of West Tropical Africa* by H. M. Burkill, "the powdered root of *Xylopiya aethiopyca* is used as a dressing for sores and to rub on gums for pyorrhoea and in local treatment of cancer in Nigeria, and when mixed with salt is a cure for constipation.

Ageratum conyzoides

Commonly called goat weed and billy goat weed, *Ageratum conyzoides* L. belongs to the plant family Asteraceae (formerly Compositae). It is native to Central America, Caribbean, United States, Southeast Asia, South China, India, Nigeria, Australia, and South America. It is traditionally called ufu opioko and otogo by the Igedes in Benue state, Nigeria. In Southwestern Nigeria, it is known as Imí esú. It is called ebegho-edore in Edo, ikoun ifuo eyen in Efik, agadi isi awa in Ibo, huhu in Tiv, ako yunyun in Yoruba. *Ageratum conyzoides* has been used in folklore for the treatment of fever, pneumonia, cold, rheumatism, spasm, headache, and curing wounds. Its gastro-protective, antibacterial, anti-inflammatory, anti-analgesic, antipyretic, anticomocidal, and anticonvulsant properties have been reported.

According to *The Useful Plants of West Tropical Africa* by H. M. Burkill, "the leaves of *Ageratum conyzoides* are considered to be antiseptic. Preparations are commonly applied to crawl-craw in the Region, and to itch in South East (SE) Asia. In Congo the sap is put onto prurient affections of the skin. The leaves are cicitrisant. They are applied to chronic ulcers, to bruises, cuts and sores, and circumcision wounds in Nigeria; to cuts and sores in Gabon, Tanganyika and in Ethiopia; as a haemostatic topically on wounds and haemorrhoids and intra-vaginally for uterine bleeding in Ivory Coast.

"The sap or the plant, dried and powdered, is a wound-dressing in Tanganyika, and is valued especially for burns; similar uses are recorded in SE Asia. The leaves may have some analgesic action: powdered leaves are applied to the forehead for headache in The Gambia; the whole green leaf is so used in Nigeria; the sap in Congo, and mixed with clay in Ivory Coast-Upper Volta for headache and chest-pains. Leaves baked in palm-oil are used for rheumatism in Gabon."

Ocimum gratissimum

Commonly called scent leaf or tea bush, *Ocimum gratissimum* is of the plant family Lamiaceae. *Ocimum gratissimum* is a shrub commonly found around village huts and in gardens. It is known as efinrin ajase in Yoruba, ebavbokho in Bini, aai doya ta gida in Hausa, nchuanwu in Igbo.

Chinese, United States, and Nigerian scientists from Department of Biology Jackson State University, Jackson and College of Chemistry & Chemical Engineering, Guangxi Normal University, Guilin, P.R. China have explored the cancer-fighting potential of scent leaf extracts.

The study is titled: " Potential Cancer- fighting *Ocimum gratissimum* (OG) leaf extracts: Increased Anti-proliferation Activity of Partially Purified Fractions and their Spectral Fingerprints " was published in *Ethnicity & Disease*, Volume 20.

The researchers wrote: "In previous in-vitro studies, we have shown that the aqueous extracts of the medicinal herb *Ocimum gratissimum* (Og) inhibit the proliferation of several cancer cell lines, especially prostate adenocarcinoma (PC-3) cells. Therefore, Og leaf extracts may harbor novel cancer-fighting compounds that need to be isolated, purified and characterised.

"In this study, we investigated the anti- proliferation activity of Og leaf extract on prostate cancer (PC-3) cells in-vitro, because we believe that Og leaf extract may contain novel cancer-fighting compounds. Our results show that aqueous Og leaf extract inhibits proliferation of treated PC-3 cells in a concentration dependent manner."

Kigelia africana

Scientists have also found that the sausage tree (*Kigelia africana/pinnata*) could be effectively used to treat cancers. According to ethnobotany and recent scientific work of Professor P. J. Houghton of the Pharmacognosy Research Laboratories, Department of Pharmacy, King 's College London, "experiments into the effect of *Kigelia* extracts and some of the pure compounds contained therein, on micro-organisms and cancer cells have shown that the traditional use of this plant is given considerable justification. In addition, there exists evidence for its anti- inflammatory reputation."

Investigation into the biological activity of *Kigelia pinnata* has focussed on its antibacterial activity and its cytotoxic effects against cancer cell lines. These are related to the traditional uses of bark and fruit extracts for treating diseases caused by micro-organisms and as a remedy for skin cancer.

Vernonia amygdalina

Also, a Nigerian born Professor of Biology, Ernest Izevbigie has patented a formula made from bitter leaf (*Vernonia amygdalina*). This bitter leaf-based formula is a proven anti-diabetic and anti-cancer formula in laboratory and clinical trials. This formula product can also benefit HIV/AIDS patients. It has been patented: U.S. Patent 6,713,098 in 2004 and the second 6,848,604 in 2005.

Izevbigie said, "we found that in using the plant material (from *Vernonia amygdalina*), some compounds from the extracts were able to inhibit the growth of breast cancer cells. Later through collaborative research, we found they were also effective in other tumor cells. "

Izevbigie explained that evidence from cell culture and animal studies research and reports from individuals reveal that bitter leaf formula supplement may abate or improve the health conditions or symptoms of Human Immuno-deficiency Virus (HIV)/Acquired Immune Deficiency Syndrome (AIDS) patients including abrosia (wasting away), nausea and vomiting, compromised immune systems etc. Bitter leaf supplement-induced stimulation of the immune system offers hope to many suffering with AIDS related diseases.

The professor further explained that available data shows that bitter leaf extracts might be effective against herpes virus, and against Kaposi sarcomas (KS), a tumour caused by Human herpes virus 8 (HHV8).

Some of the principal chemical compounds found in the bitter leaf herb are known as steroid glycosides – type vernonioside B1. These compounds possess potent anti- parasitic, anti-tumor, anti-inflammatory, and anti-bacterial effects.

Carica papaya

Also, researchers have found that papaya leaf extract and its tea have dramatic cancer-fighting properties against a broad range of tumors, backing a belief held in a number of folk traditions. University of Florida, United States researcher Nam Dang and colleagues in Japan, in a report published in the *Journal of Ethnopharmacology*, documented papaya 's anticancer effect against tumors of the cervix, breast, liver, lung and pancreas.

The researchers used an extract made from dried papaya leaves, and the effects were stronger when cells received larger doses of papaya leaf tea.

Dang and the other scientists showed that papaya leaf extract boosts the production of key signaling molecules called Th1-type cytokines, which help regulate the immune system. This could lead to therapeutic treatments that use the immune system to fight cancers, they said in the recent issue of the journal and released by the University.

Papaya has been used as a folk remedy for a variety of ailments in many parts of the world, especially Asia. Deng said the results are consistent with reports from indigenous populations in Australia and his native Vietnam. The researchers said papaya extract did not have any toxic effects on normal cells, avoiding a common side effect of many cancer treatments. Researchers exposed 10 different types of cancer cell cultures to four strengths of papaya leaf extract and measured the effect after 24 hours. Papaya slowed the growth of tumors in all the cultures. Dang and a colleague have applied to patent the process to distill the papaya extract through the University of Tokyo.

Cannabis sativa

Also, cannabis has shown promise as an effective remedy for cancers. According to a study conducted by researchers from the Complutense University in Madrid, Spain, and published in the Journal of Clinical Investigation, the active ingredient in marijuana appears to target cancerous brain cells for destruction while leaving healthy cells alone.

Researchers first conducted an experiment in mice that had been engineered to carry three different grafts of human brain cancer. They injected the mice daily with the molecule tetrahydrocannabinol (THC) near the site of the tumors once each day. The chemical appeared to stimulate the cancerous cells to engage in a process known as autophagy, in which cells initiate their own breakdown.

Leader of the team of researchers, Guillermo Velasco, said, "these results may help to design new cancer therapies based on the use of medicines containing the active principle of marijuana and/or in the activation of autophagy. "

THC belongs to a class of chemicals known as cannabinoids, named after the cannabis (marijuana) plant in which they occur. It is the chemical responsible for the psychoactive effects of marijuana consumption.

The findings add to mixed evidence about the effects of marijuana on human health. Studies have suggested the drug can raise a person 's risk of heart attack or stroke and cause cancer.

Other research has shown benefits, such as staving off Alzheimer 's, and many doctors view THC as a valuable way to treat weight loss associated with AIDS, and nausea and vomiting associated with chemotherapy in cancer patients.

Velasco and his team's study included an analysis of two tumours from two people with a highly aggressive brain cancer, which showed signs of autophagy after receiving THC.

The researchers said the findings could pave the way for cannabinoid-based drugs to treat cancer, although that approach has so proved unsuccessful when it comes to obesity.

The active compound in marijuana, THC, can slow the growth of lung tumours and reduce the spread of the cancer in mice, a preliminary study reveals. Human lung cancer tumours grew less than half as fast in mice that received moderate doses of the compound, the researchers reveal. They hope that drugs mimicking the apparent anti-cancer effects of THC could one day help treat patients. The team strongly discourages people from self- medicating by smoking marijuana, noting that doing so could potentially encourage tumour growth.

U.S. scientists led by Dr. Sean McAllister have said that a compound found in cannabis may stop breast cancer spreading throughout the body. The research team from the California Pacific Medical Center Research Institute is upbeat that cannabidiol or CBD could be a non-toxic alternative to chemotherapy.

There more than 400 active chemicals in cannabis. CBD is one of those major chemical compounds with active healing properties found in cannabis. The other major compound is known as THC. CBD is an anti-inflammatory that restores the normal homeostatic balance of the human cells. It has been reported for several years now that CBD offers the hope of a non-toxic therapy that could achieve the same results without any of the painful side effects. This latest research appears to prove another solid confirmation of this age-old claim. CBD works by blocking the activity of a gene called Id-1, which is believed to be responsible for the aggressive spread of cancer cells away from the original tumour site – a process called metastasis.

Past work has shown CBD can block a range of aggressive cancers including human brain cancers. This latest study found CBD appeared to have a similar effect on breast cancer cells in the lab.

Several cancer drugs based on plant chemicals are already used widely, such as vincristine – which is derived from a type of flower called Madagascar Periwinkle and is used to treat breast and lung cancer. It will be interesting to see whether those, who have banned and demonised cannabis, will permit CBD to be used to heal women with breast cancers.

Following the growing interest in medical benefits of cannabis, a new study finds that the compound can help fight prostate cancer. According to the study published in the British Journal of Cancer, chemicals found in cannabis can stop prostate cancer cells from growing in the laboratory. Its active chemicals known as cannabinoids

— methanandamide and JWH-015 — are also reported to be effective in reducing the size of the tumor in mice.

The compound is believed to block CB2 receptors on the surface of the cancerous tissue, preventing the division and growth of the tumor cells. It is reported to be more effective in treating aggressive prostate cancer cell types, which do not respond to existing hormone treatments.

Scientists hope that cannabis-based medicines could help fight prostate cancer in the near future. They, however, stressed that an individual should not start smoking cannabis with the aim of fighting the disease, as its use is associated with psychotropic effects.