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17/SCI03/011

BCH 408

WRITE ON THE EFFICACY OF COMMONLY USED NIGERIAN MEDICINAL

PLANTS IN THE TREATMENT AND MANAGEMENT OF DIABETES, LIVER

DISEASES AND MALARIA

Medicinal plants are the richest bio resource for drugs of traditional system. These plants

synthesize hundreds of chemical compounds for defense against diseases. The use of medicinal

plants in Africa and beyond has taken center stage where the uses and search for herbal cures as

preventive approach to diseases is now globally acclaimed. Medicinal plants have been known to

be important sources of therapeutic or curative aids as they contain many phytochemicals. They

are also important because of their compatibility and adaptivity with the human body and they

pose lesser side effects. Medicinal plants are easily accessible and affordable and have paved a

way for the attractiveness of plants compared to modern medicine. Medicinal plants have many characteristics when used as a treatment and they include: Synergic medicine: The ingredients of plants all interact simultaneously, so their uses can complement or damage while others neutralize their possible negative effects. Support of official medicine: In the treatment of complex cases like cancer, the components of the plants prove to be very effective. Preventive medicine: It has been proven that the component of the plants also has the ability to prevent the appearance of some diseases. This will help to reduce the use of the chemical remedies which will be used when the disease is already present i.e., reduce the side effect of synthetic treatment.

1) DIABETES

Diabetes mellitus (DM) is a metabolic disorder that is characterized by hyperglycemia resulting from defects in insulin secretion, insulin action or both due to the destruction of the pancreatic beta cells. Medicinal plants play a significant role in the development of potent therapeutic agents that can be used in the treatment and management of diabetes mellitus. Moringa oleifera generally known as moringa belongs to the family of Moringaceae is commonly found in Africa and Asia. It has been reported that the leaves possess anti-fungal, anti-microbial, anti-atherosclerotic and anti-inflammatory properties. Several carbamate and thiocarbamate glycosides have been isolated from its leaves. The ethanolic extract have been shown to contain saponins, and phytate and has shown anti-oxidant properties and its leaves are a good source of proteins. Its aqueous extract possesses anti-diabetic and lipid lowering properties. M.olifera possesses bioactive compounds, it is a source of anti-oxidants, vitamins, and a protease-resistant glycoprotein that functions as a dietary fiber. It possesses anti-oxidant properties because it contains phenolic compounds and flavonoids (kaempferol and quercetin). The hypoglycemic activity of the plant could be as a result of phytochemicals. The hypoglycemic effects have been tested with doses of M.oleifera seed powder in diabetic rats where it decreases fasting blood glucose and serum hemoglobin A1c. the phytochemical kaempferol in the plant improves insulin resistance while quercetin inhibits the transport of fructose and glucose by GLUT2 in the brain and stimulates GLUT4 translocation and expression in skeletal muscles which could explain the tendency towards lowered blood glucose. A study done by Olayaki et al., 2015 showed that M.olifera reduced blood glucose concentration and inhibited weight loss which may be due to the presence of essential amino and vitamin A, B,C and E in the extract.

2) LIVER DISEASE

The liver is the major organ that is involved in the metabolism and detoxification of drugs and toxins. This drugs and toxins affect the liver more frequently than any other organ in the body and that places the liver at risk of toxic damage. After absorption by the intestines, drugs reach the liver via the portal system. In the hepatocytes, these chemicals undergo complex metabolic processes to be converted to hydrophilic substances readily soluble in the blood stream and eliminated thereafter. Drugs or their metabolites can cause toxic effects on the liver. Chrysophyllum albidum belongs to the family of sapotaceae and is specifically distributed in Nigeria, Cameroon and cote d ivoire. It is popularly called agbalumo and udara. When toxic substances like carbon tetrachloride enters the body, it is bio transformed by the cytochrome P450 system to produce free radicals which binds to cell membranes and organelles to elicit lipid peroxidation. It has been proven that CCL4 led to the elevation of liver enzymes that induces damages to the liver. The elevated enzymes include AST, ALT and ALP which are a direct reflection of alterations in the hepatic structural integrity. Upon administration with the extract of C. albidum, the elevated levels of the enzymes significantly reduced indicatingnhepatoprotection from the toxicant. High levels of ALP is an indicator of obstructive jaundice and intra-hepatic cholestasis but treatment with C.albidum led to a reduction in total plasma bilirubin suggesting the absence of jaundice and the effectiveness of the extract in activating a normal functional status of the liver. The hepatoprotective property of C.albidum may be due to the combined effects of phytochemicals such as flavonoids, triterpenoids and tannins.

3) MALARIA

Malaria is one of the commonest infectious diseases caused by protozoa parasite of the genus plasmodium. The plasmodium species include P.falciparum. P.vivax, P.ovale and P.malariae. the P.falciparum is the most common in this part of the world. Malaria is the leading cause of death and illness in sub-saharan Africa with an annual mortality rate of approximately one million children under five. Vernonia amagdalina belongs to the family of Asteraceae. Its common name is bitter leaf. Vernonia amagdalina is used traditionally to treat the infection. The ethanolic extract of the plant has been proven to function as anti-bacterial, anti-fungal, anti-cancer and anti-plasmodial agent. Research showed that the plant extract decreased parasite load and the plant contains flavonoids, tannins, saponins. Administration of plant extract to a plasmodium infected model significantly reduced WBC and triggered an increase in PCV as a result of increases production of RBC thus suppressing hemolytic damage to RBC. Studies have shown that the extract revealed relatively reduced percentage of parasitaemia on P.berghei infected mice. The anti-plasmodial activity of the plant extract was found to be dose-dependant with the lowest dose administered at 100 mg/kg body weight and the high dose administered at 1000 mg/kg body weight. The study showed that the highest dose corresponds with the highest survival rate and showed complete clearance of the parasite. Also, Morinda lucida commonly called oruwo by the yorubas exhibits anti-malarial properties due to the presence of steroids, alkaloids and tannins. This plant has been tested to be very effective in the treatment of malaria parasite.