Anchomanes difformis: A Multipurpose Phytomedicine

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Abstract: Anchomanes difformis (Blume) Engl. Pallidus, commonly known as forest Anchomanes is a plant of the family Araceae in the order Arales indigenous to the African continent. Anchomanes difformis is a multipurpose plant that has been used broadly in treatment of a variety of ailments traditionally. It has been used traditionally in the treatment of Hernia, oedema, constipation, heartburns, tuberculosis, prostatitis, Anuria, constipation, scabies, rheumatism, asthma, diarrhea, vertigo, Epilepsy, leprosy, diabetes, sleeping sickness, psychiatric illness, Jaundice, filariasis, Kidney pain. Studies have been carried out on the analgesic, anti-inflammatory activity, anti-asthmatic, anti-ulcer, anti-microbial, antioxidant, diuretic and laxative effects of the plant.

Keywords: Anchomanes difformis, Araceae, multipurpose plant, antioxidant

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I. Introduction

Anchomanes difformis (Blume) Engl. Pallidus, commonly known as forest Anchomanes is a plant of the family Araceae in the order Arales indigenous to the African continent. It grows widely in rainforests of West Tropical Africa including Nigeria, Ghana, Cote d’Ivoire, Sierra Leone, Senegal, and Togo. [1] Anchomanes difformis is a large herbaceous plant growing about 2metres high. It has a growing horizontal tuber that measures up to 80cm by 20cm across, the plant has broad divided leaf with a fleshy thorny stem. [2] Anchomanes difformis is recognized by the following names in Nigeria: olumahi” by the Igbo, ebanaen by the Efik, chakara by the Hausa, boubekeodu by the Ijawbrisoko by the Yoruba in South West of Nigeria Olikhoror by the Bini tribe of Edo state [3] Anchomanes difformis is a multipurpose plant that has been used broadly in treatment of a variety of ailments traditionally [4]. This review highlights the multipurpose medicinal use of this plant traditionally, phytochemical constituents and pharmacological properties of this plant.

II. Medicinal Uses of Different Parts of Anchomanes difformis

Rhizome
The rhizome is used in treatment of gonorrhea, abdominal pain, Hernia, oedema, constipation, heartburns, tuberculosis, prostatitis, Anuria, constipation, scabies, rheumatism, asthma, diarrhea, vertigo, Epilepsy, leprosy, diabetes, sleeping sickness, psychiatric illness, Jaundice, filariasis, Kidney pain, rubefacient, vesicant, diuretic and Poison antidote [5].

Roots
The roots are used to treat cough, diabetes, dysentery, throat problems [6].

Leaves
Leaves are used as galactagogue, cough, and purgative [7].

Stems
The stems are used to ease child birth, used as diuretic, purgative [8].

III. Phytochemical Constituents
The compounds, 12-heptadecenoic acid, hexadecanoic Acid and β-stigmasterol were isolated from the rhizome of Anchomanes difformis. These compounds showed significant activity against Onchocerca ochengi [9]. Proximate analysis of the tuber revealed the presence of carbohydrates 63.64 %, protein 1.31 %, fat 1.5 %, and crude fibre content 12.3 %. The methanol, acetone and n-butanol extracts revealed the presence of flavonoids, tannins and saponins [4, 10].

IV. Pharmacological Properties And Medicinal Uses Of Anchomanes difformis

4.1. Analgesic activity and Anti-inflammatory activity
The methanol extract of Anchomanes difformis rhizome proved effective in-vivo against formalin induced paw licking and lifting. At a dose of 500mg/kg and 1000mg/kg in both first and second phases, it was as...
effective as indomethacin 10mg/kg in the formalin induced paw licking and lifting model. The extract at a dose of 500mg/kg showed significant decrease in abdominal constrictions comparable to Indomethacin 10mg/kg in the acetic acid induced abdominal constriction model [11]. This provides a scientific basis for its use as pain reliever traditionally [8]. The ethanol leaves extract of Anchomanes difformis showed significant reduction in oedema at high dose (800 and 1600 mg/kg) in the egg induced albumin oedema [12].

4.2. Anti-Ulcer activity

The ethyl acetate fraction of Anchomanes difformis extract was investigated for anti-ulcer activity using the ethanol-induced and pylorus ligation induced ulceration models. Pre-administration of the extract (200 and 500mg/kg) significantly reduced the total acid output and reduced stomach lesions in the pylorus ligation model but had no effect on gastric secretions and acidity. In the ethanol induced ulceration model, the severity of the ulcer was significantly (P<0.001) reduced when pretreated with the ethyl acetate fraction. The extract showed negative acid neutralizing effect. The study confirms that the ethyl acetate fraction of the plant has some degree of gastroprotective effect and provides rational for the use of the plant by local people to treat ulcers [13]. The aqueous extract showed activity similar to the ethyl acetate fraction [14].

4.3. Anti-asthmatic activity

Iduet al., 2016 [15] investigated the anti-asthmatic effect of the aqueous leaf extract. Evaluating the anti-histamine effect on the histamine induced bronchoconstriction, tracheal fluid volume and tracheal fluid viscosity. The aqueous leaf (400mg/kg) extract proved as effective as the standard drug salbutamol in asthma protection in the histamine induced bronchoconstriction model. The extract had no significant effect on tracheal fluid volume and viscosity.

4.4. Anti-diabetic activity

The ethanol extract of Anchomanes difformis leaves showed significant reduction in fasting blood glucose level in Alloxan-induced diabetes model. The result was comparable to the standard drug glibenclamide [16]. The ethanol extract of the root significantly reduced plasma glucose of diabetic rats but had no effect on normoglycemic rats. This shows that the plant has anti-hyperglycemic effect with no hypoglycemic effect [17].

4.5. Anti-microbial activity

Essential oils extracted from the leaves, stem and roots were investigated for antimicrobial activity against Klebsiella pneumoniae, Bacillus subtilis, Staphylococcus aureus, and Pseudomonas aeruginosa and three species of fungi Candida albicans, C. stellatoidea, and C. torulopsis using agar well diffusion methods and minimum inhibitory concentrations. All the bacteria showed some degree of sensitivity to the oils except Pseudomonas aeruginosa which was resistant to the leave but has some susceptibility to the stem and root. C. torulopsis showed sensitivity against essential oil from the stem while the remaining fungi were resistant [18].

4.6. Anti-onchocercal activity

The methanol extract of Anchomanes difformis rhizome is reported to have 100% inhibition on Onchocerca ochengi closely related specie of Onchocerca volvulus. This justifies its use traditionally in treatment of filarial worms [9].

4.7. Effect on female sex hormone

Egwurugwu et al., 2016 investigated the ethnomedical claim of using Anchomanes difformis rhizome in treatment of uterine fibroid by assessing the effect of the plant on female sex hormone levels in female albino rats. The levels of estradiol, follicle stimulating hormone, prolactin, luteinizing hormone and progesterone in the serum were evaluated after administering the plant. The study showed dose dependent decrease in the serum levels of estradiol and progesterone in the test groups after two weeks of treatment and significant decrease in luteinizing hormone which was not dose dependent [19].

4.8. Laxative and Diuretic effect

The extracts (aqueous and ethanol) of the Anchomanes difformis rhizome were evaluated for laxative and diuretic effects by measuring latency time, frequency and total volume excreted of feces and urine respectively. The physical state of the feces was also examined. Anchomanes difformis extracts showed a significant increase in the latency of the first feces excretions at doses of 400 and 800 mg/kg and total fecal mass excreted at a dose of 800 mg/kg [3].
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4.9. Antioxidant activity

Abubakaret al., 2013 evaluated the antioxidant activity by measuring the free radical scavenging activity using 1,1-diphenyl-2-picrylhydrayl radical (DPPH), reducing power assay, total antioxidant capacity of the phosphomolybdenum method and the total phenolic content using the Folin-Ciocalteu reagent on the acetone, n-butanol and methanol root extracts of Anchomanes difformis. The n-butanol extract has significantly (p < 0.05) high phenolic content. The extracts showed strong concentration dependent radical scavenging activity. The results showed that the n-butanol extract has strong reducing ability which is analogous to that of gallic acid [4].

4.10. Insecticidal activity

Powdered rhizome of Anchomanes difformis is reported to have insecticidal activity. The insecticidal activity was tested on Sitophiluszeamais, Triboliumcastaneum, Oryzaephilusmercator, Callosobruchusmaculatus, Lasiodermaserricorne. The plant was effective against all the beetle species showing 100% effectiveness against Callosobruchusmaculatus.[20]

V. Conclusion

Anchomanes difformis is a multipurpose plant that has been used broadly in treatment of a variety of ailments traditionally. Various studies have confirmed some of the Ethnomedicinal uses of the plant. According to this review, the plant is a potential analgesic, anti-inflammatory, anti-asthmatic, anti-ulcer, anti-microbial, antioxidant, diuretic and laxative. Advance studies are needed to isolate the compounds responsible for these pharmacological activities.

References


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