



Research Article

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Phytochemical studies and antimicrobial activity of *Anthocleista djalonenis* (Okpokolo leaf)

Ojiako E. N. and Okoye I. E.

Chukwuemeka Odumegwu Ojukwu University, ULI, Anambra State, Nigeria

ABSTRACT

Phytochemical study and antimicrobial activity of Anthocleista djalonenis was carried out by solvent extraction using ethanol and aqueous solvents. Results obtained showed that both ethanolic and aqueous extracts contain alkaloids 4+_8%, tannins 1+_1%, flavonoids 3+_3%, cardiac glycoside 2+_3%, saponin 4+_5% and reducing sugar, while protein was absent in ethanol extract but present in aqueous extract. The antimicrobial screening should inhibit growth of staphylococcus aureus at 10.17+_0.74, escherichia coli 13.30+_0.22 and candida albicans 14.97+_0.17 for ethanolic extract, aqueous extract inhibition is from 7.07+_0.14 for staphylococcus aureus, 9.23+_0.12 for Escherichia Coli and 12.63+_0.31 for candida albicans .these are indication that the plant is used as medicinal plant.

Keywords: antimicrobial, screening, medicinal, plant.

INTRODUCTION

Medicinal plants derived substances which could be relied upon to provide deals solutions to the problems of multi-drugs resistant mycobacterium strains [1]. Medicinal plants are commonly us in healing and preventing specific ailments and diseases that are generally considered to play beneficial roles in health care [2]. Values of medicinal plants lie in some chemical substances and the chemical compound known as phytochemicals. Medicine is the science of preventing and curing illness and disease [3]. Many useful drugs come from plants and these plants have been used as medicine for hundreds of years.

It deals with the chemical structures of secondary metabolites, their metabolism, distribution and biological function. It also involves synthesizing substances that are useful for the maintenance of good health in human and other animals. According to the World Health Organizations three quarters of plants that provide active ingredients for drug s are to the attention of researchers because of t heir use in traditional medicine. Among the one hundred and twenty active components currently used in modern medicine today, about 80% show a positive correlation between their modern therapeutic use and the traditional use of the plant.

Many plants species have been recognized having medicinal values and properties which may be present in one or all their parts , root ,stem ,bark, fruit, leaf, flower or seed. Large percentage of these plants are found in the forest . It is on the basis that athocleista djalonenis has been chosen for analysis of its phytochemical and antimicrobial activities to know their contents and possible preventive properties.

EXPERIMENTAL SECTION

Sample collection and pretreatment

Leaves of *Anthocleista djalonenensis* were obtained from Umuota village Obosi- Idemili North of Anambra State, Nigeria. It was identified by Dr. J. C. I. Odezue of Federal Polytechnic, Oko. Samples collected were collected and dried under room temperature for two weeks and then pulverized in a milling machine and stored for future analysis.

50grams of the pulverized air dried leaves were soaked into 100mls each of two different solvents: alcohol and aqueous for 24hr respectively. Each of them was filtered and the filtrate were kept in an airtight container and labeled properly. The aqueous and alcoholic extracts were used for phytochemical screening and the quantitative analysis determined. This was followed by antimicrobial screening. The susceptibility testing using agar- wellled diffusion method was carried out using broth culture for *staphylococcus aureus*, *eschericha coli* and *candida albicus*.

RESULTS AND DISCUSSION

The result of the phytochemical analysis of *Anthocleista djalonenensis* leaf is shown as seen in Table 1.

Table 1: Result of the phytochemical analysis of *Anthocleista djalonenensis* leaf.

Parameter	Ethanol extract	Aqueous extract
Alkaloid	++	++
Flavonoid	++	++
Tannin	+	+
Protein	-	++
Cardiac glycoside	++	++
Saponin	++	++
Reducing sugar	++	++
Steroid	Light green	Green

++ = present in high concentration
 + = present in moderate concentration
 - = absent

Table 11: Showing Results on Bioactivity Test of *Anthocleista djalonenensis* (The Diameter zones of inhibition of the extract against the test organism using 5mm cork borer)

Test substance	<i>Staphylococcus aureus</i>	<i>Escherichia coli</i>	<i>Candida albicans</i>
Ethanol extract	10.17+ 0.74	13.30+ 0.22	14.97+ 0.17
Aqueous extract	7.07+ 0.14	9.23+ 0.12	12.63+ 0.31
CPX(0.05%)	----	---	13.27+ 0.37
Absolute ethanol(0.1ml)	----	---	---
Distilled water(0.1ml)	----	---	---

CPX = Ciprofloxacin; NYS =Nystatin

The phytochemical analysis shown in Table 1 can be seen that it contains alkaloid, flavonoids , tannin, cardiac glycoside and reducing sugar in both alcoholic and aqueous extract respectively. The presence of flavonoid, saponin and alkanoid are indication that it can be used to treat diarrhea and dysentery. Flavonoid has the property of reinforcing capillary walls through improving the exchange of nutrients and oxygen between the blood and the tissues in human and animals (onuegbu et al 2008). The leaf contains tannins which are metal chelators and also weak organic acidic groups known to have antibacterial and inflammatory properties (Ezem 2008).

From Table 11 it could be seen that the antibacterial screening of *Anthocleista djalonenensis* has constituents that lead to support its medicinal uses. The ethanol extract had the highest inhibition zone followed by aqueous extract on *staphylococcus aureus* (10.17+ 0.74),*eschericha coli* (13.30+ 0.22) and *candida albicans* (14.97+ 0.17) as against 7.07+ 0.1, 13.30+ 0.22 and 12.63+ 0.31 respectively of aqueous extract. Ciprofloxacin can be used to control *staphylococcus aureus* and *eschericha coli* while for *candida albicans*, nystatin is used.

CONCLUSION

Anthocleista djalonesis leaf contains active ingredients of phytochemicals and possess strong inhibitory effects on microbes especially on *staphylococcus aureus*, *escherista coli* and *candida albicans* which justify the use in ethomedicine. It is recommended that people be encouraged to grow the tree for easy accessibility because it is normally found in the forest. There is also a need to integrate its potencies into orthodox medicine.

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