Ethnobotanical Importance and Phytochemical Analysis of Some Medicinal Plants Commonly Used As Herbal Remedies in Oye Local Government Area of Ekiti- State, Nigeria

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Abstract: Ten medicinal plants including Aframomum meleguata, Chromolaena odorata, Cissampelous owariensis, Pergularia daisy, Perquetina nigrensis, Ocimum bicalycinum, Ocimum gratissimum, Tithornia diversifolia, Venonia amygdalina, Zingiber officinalis used for curing different ailments in the Oye Local Government area of Ekiti Stat, Nigeria were examined in this study. The contents of all the plants were found used for different types of ailments. The plants were found to contain alkaloids, saponin, tannins, phylobatanins, flavonoids, terpenoids and cardiac glycosides. Also the quantitative analysis was conducted to reveal amounts of phytochemicals in these plants. Results obtained revealed that ethnobotanical information obtained from these plants could constitute a baseline for the production of synthetic drugs from them.

Key words: Phytochemical analysis, medicinal plants, Oye Local Government area, southern Nigeria.

I. Introduction

The indigenous use of plants and plant materials has been from time immemorial. People from the rural areas relied absolutely on plants growing in the wild for the treatments of various diseases (Iwu, 2003). Also previous studies by Edeoga et al (2003, 2005) and Kayode et al; (2009) revealed that a wide variety of plants are known to be used as herbal remedies for the treatment of different diseases. Similarly Olanipekun (2011) asserted that various ailments treated with medicinal plants in Ekiti State, Nigeria include skin diseases, respiratory infections, diarrhoea, fever, wounds etc.

Herbs and plants are now known to contain minerals and vitamins that help body to resist diseases, strengthen tissues and improve the nervous systems. Plants such as Aframomummeleguata, Chromolaena odorata, Cissampelous owariensis, pergularia daisy, Perquetina nigrensis, Ocimum bicalycinum, Ocimum gratissimum, Venonia amygdalina, Tithornia diversifolia, and Zingiber officinalis are being used extensively in herbal medicine in south-western Nigeria.

Research studies, such as those of Dingman (2002) and Mathew et. al.; (1999), had revealed that the extracts from medicinal plants species have different chemical composition that are essential for the physiological functions of human body, hence the plants have potential for use in treatment of different ailments and play important role in satisfying human needs for energy and life processes.

Consequent on the above, the present study investigates ten medicinal plants used in the study area and document their phytochemical compositions.

II. Materials And Methods

Collection and identification of plant materials

The fresh seeds and rhizomes of Aframomummeleguata and Zingiber officinalis respectively and the fresh leaves of Chromolaena odorata, Cissampelous owariensis, Ocimum bicalycinum, Ocimum gratissimum, Perquetina nigrensis, Pergularia daisy, Tithornia diversifolia and Venonia amygdalina were randomly collected from selected villages in Oye Local Government Area of Ekiti State. The selected villages were Ayede, Ilupeju, Isan, Itaji and Omu-ijelu.

Recognizance surveys and visits were carried out in the villages selected in order to intimate the residents of the aims and objectives of the study and enlist their support for the study. In each of these villages, five respondents who have maintained continuous domicile in the villages for a period of not less than 20 years were chosen and interviewed with the aid of semi-structured questionnaire matrix. The interviews were conducted with a fairly open framework that allowed for focused, conversational and two-way communication.

Voucher specimens of the above stated plants were collected and were deposited at the herbarium of the Department of Plant Science, Ekiti-State University, Ado-Ekiti.

The medicinal uses of the plants were documented. Samples of the plants were air dried for two weeks, after which they were ground into powder using a mechanical blender before being subjected to phytochemical screening. The phytochemical screening of the samples was carried out on the aqueous extract of
the powdered specimens using standard procedures to identify their chemicals constituents as described by Sofowora (1993), Trease and Evans (1989) and Harbone (1973) as follow:

**Test for Tannins**

0.5 g of the dried powdered samples was boiled in 20 ml of water, in a test-tube and then filtered. A few drops of 0.1 % Ferric chloride was added and observed. Brownish-green or blue-black colour indicates the presence of tannins.

**Test for Saponins**

2g of the powdered samples were boiled in 20ml of distilled water in a water bath and filtered. 10ml of the filtrate was mixed with 5ml of distilled water and shaken vigorously for a stable persistent froth. The frothing was mixed with three drops of olive oil and shaken vigorously and formation of emulsion was observed for the presence of saponin.

**Test for Flavonoids**

5ml of dilute ammonia were added to a portion of the aqueous filtrate of each of plant extract followed by addition of 2ml concentrated H₂SO₄. A yellow coloration observed in each extract indicated the presence of flavonoids.

**Test for Cardiac Glycosides**

5ml of each extracts was treated with 2ml of glacial acetic acid containing one drop of ferric chloride solution. This was underplayed with 1ml of concentrated sulphuric acid. A brown ring of the interface indicated a deoxysugar characteristic of cardenolides.

**Test for Alkaloids**

The method of Harbone (1973) was used in this test. 5g of the sample was weighed into a 250ml beaker and 200ml of 10 % acetic acid in ethanol was added and covered, and allowed to stand for 4hrs. This was filtered and the extract was concentrated on a water bath to one-quarter of the original volume. Concentrated ammonium hydroxide was added drop wise to the extract until the precipitation was complete. The whole solution was allowed to settle and the precipitate was collected and washed with dilute ammonium hydroxide and then filtered. The residue, which was the alkaloids, was dried and weighed.

**Test for Steroids**

2ml of acetic anhydride was added to 0.5 g of ethanol extract of each sample with 2ml H₂SO₄. The colour changed from violet to blue or green in some samples indicated the presence of steroids.

**Test for Terpenoids**

5ml of each extract was mixed in 2ml of chloroform a and concentrated H₂SO₄ and after which 3ml was carefully added to form a layer. A reddish brown coloration of the interface was formed to show positive result for the presence of terpenoids.

### III. Results And Discussion

The present study revealed the various medicinal uses of the identified botanicals in the study area. Table 1 shows that the seeds of Aframomum meleguata were used for the treatment of measles, diarrhoea, leprosy and its powder taken orally against excessive lactation while the rhizomes of Zingiber officinale was reported as being used for the treatment of diarrhoea, piles, asthma and cough. However, the leaves of the remaining botanicals were found to be used for various ailments ranging from the treatment of malaria fever, various aches, skin diseases, cough, scabies, cold and catarrh to liver disorder, rheumatism, jaundices and athlete foot.

<table>
<thead>
<tr>
<th>S/N</th>
<th>Botanical Name</th>
<th>Family Name</th>
<th>Local Name</th>
<th>Common Name</th>
<th>Part Used</th>
<th>Traditional Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Aframomummeleguata</td>
<td>Zingeberaceae</td>
<td>Ata-ire</td>
<td>Alligator pepper</td>
<td>Seeds</td>
<td>For treatment of measles, diarrhoea, leprosy, taken for excessive lactation</td>
</tr>
<tr>
<td>2</td>
<td>Chromolaena odorata</td>
<td>Asteraceae</td>
<td>Ewe-Akintola</td>
<td>Siam weeds</td>
<td>leaves</td>
<td>For treatment of diarrhoea, malaria, fever, toothache, the young leaves are squeezed and the liquid can be used to treat skin diseases, skin wound and dysentery.</td>
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<tr>
<td>3</td>
<td>Cissalmpelousowariensis</td>
<td>Aseclepiadaceae</td>
<td>Ewe-Velvet</td>
<td>Leaves</td>
<td></td>
<td>For treatments of diarrhoea,</td>
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</table>
Ethnobotanical Importance And Phytochemical Analysis Of Some Medicinal Plants Commonly Used

<table>
<thead>
<tr>
<th>Medicinal Plants</th>
<th>Alkaloids</th>
<th>Tannins</th>
<th>Phylobatanins</th>
<th>Steroids</th>
<th>Cardiac Glycosides</th>
<th>Terpenoids</th>
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<tbody>
<tr>
<td>Aframomummeleguata</td>
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<td>Cissampelosowariensis</td>
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<td>Ocimumgratisimum</td>
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<td>Parquetinanigrensis</td>
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<td>Pergulariadaemia</td>
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<td>Tithorniadiversifolia</td>
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<td>Venoniaamygdalina</td>
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<td>Zingiberofficinale</td>
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Key: (+) signifies presence of the phytochemicals. (-) signifies absence of the phytochemicals.
The presence of alkaloids, tannins and flavonoids on the seeds of Aframomum meleguata, rhizomes of Zingiber officinale and the leaves of the remaining eight plant species agreed with the findings of Sofowora (1993), Trease and Evans (1989), Otoide and Kayode (2011). Results from the study revealed that Aframomum species contained all the metabolites except saponin and terpenoids. The presence of flavonoids in all the botanicals also support the findings of Edeoga et al. (2006) who had earlier reported that Ocimum basilicum extracts possessed antimicrobial activities and also the study of Gill (1992) who opined that Ocimum gratissimum leaves are useful in the treatment of catarrh, cough, and diarrhoea and chest pain. Similarly, Otoide and Kayode (2011), they reported that these plants, as well as Chromolaena odorata, are widely used in herbal medicine to treat different ailments.

The total amounts of phytochemicals in these plants are shown in Fig 1. The species were observed to be rich in alkaloids, tannins, flavonoids saponins thus suggesting their suitability for use as starting materials for the production of synthetic drugs.

![Fig 1. Quantitative analysis of medicinal plants](image_url)

**References**


