

## Evaluation of Nutritional Potential and Phytochemical Contents of Girdle Pod (*Mitracarpus scaber*) Leaves.

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### ABSTRACT

Girdle pod (*Mitracarpus scaber*). It is called (Irawo ile by Yoruba speaking people of Nigeria. It is a common perennial herb with a height of 30 cm. According to naijagists.com(2018), some of the benefits of this herb include; antibacterial and antifungal activities. It can also be used to treat aches and pains such as headaches, toothaches, arthritis pain, amenorrhea, hepatitis as well as sexually transmitted diseases. The nutritional potential and phytochemical contents of Girdle pod (*Mitracarpus scaber*) Leaves were investigated using standard methods. The results of proximate analysis of Girdle pod (*Mitracarpus scaber*) Leaves revealed that, Carbohydrate has the highest value of  $69.68 \pm 2.03\%$ , this was followed by crude protein ( $13.5 \pm 0.04\%$ ), moisture content ( $8.88 \pm 0.03\%$ ), crude fibre ( $3.92 \pm 2.03\%$ ), ash content ( $2.12 \pm 0.003\%$ ) and hexane extract content ( $1.9 \pm 0.03\%$ ). The results of determination of vitamin content of Girdle pod (*Mitracarpus scaber*) Leaves gave the followings; Vitamin A ( $0.021 \pm 0.001\text{mg}/100\text{g}$ ), Vitamin B<sub>1</sub> ( $0.173 \pm 0.001\text{mg}/100\text{g}$ ), Vitamin B<sub>2</sub> ( $0.047 \pm 0.002\text{mg}/100\text{g}$ ), Vitamin B<sub>6</sub> ( $0.368 \pm 0.001 \pm 0.001\text{mg}/100\text{g}$ ), Vitamin B<sub>12</sub> ( $0.863 \pm 0.001\text{mg}/100\text{g}$ ), Vitamin C ( $24.14 \pm 0.02\text{mg}/100\text{g}$ ), Vitamin E ( $0.603 \pm 0.001\text{mg}/100\text{g}$ ) and Vitamin K ( $0.005 \pm 0.001\text{mg}/100\text{g}$ ). The results of mineral content of Girdle pod (*Mitracarpus scaber*) Leaves depicted that, Potassium has the highest value of  $629.30 \pm 3.50\text{mg}/100\text{g}$  and this was followed by Calcium ( $31.88 \pm 1.02\text{mg}/100\text{g}$ ). Sodium also has the value of ( $28.25 \pm 0.21\text{mg}/100\text{g}$ ) while magnesium and manganese has the value of  $21.55 \pm 0.03\text{mg}/100\text{g}$  and  $4.84 \pm 0.02\text{mg}/100\text{g}$  respectively. The results phytochemical analysis showed that alkaloid has a highest value of  $7.03 \pm 0.22\text{mg}/100\text{g}$  and this is followed by saponin  $0.42 \pm 0.01\text{mg}/100\text{g}$ , flavonoid  $0.153 \pm 0.003\text{mg}/100\text{g}$ , phytate  $0.144 \pm 0.001\text{mg}/100\text{g}$ , tannin  $0.28 \pm 0.003\text{mg}/100\text{g}$ , oxalate  $0.14 \pm 0.004\text{mg}/100\text{g}$  and cyanoglycoside  $0.003 \pm 0.001\text{mg}/100\text{g}$ . Therefore, Girdle pod (*Mitracarpus scaber*) Leaf is a good source of carbohydrate, vitamin C, potassium and calcium.

**Keywords:** Composition, vitamin, minerals, nutritional, potential, Girdle pod, *Mitracarpus scaber*, phytochemical.

### iSTEAMS Proceedings Reference Format

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## 1. INTRODUCTION

According to WCF(2016), the global food security challenge is straightforward: by 2050, the world must feed 9 billion people. The demand for food will be 60% greater than it is today. In view of the above, it is necessary for government and Reschears to search into alternative sources of food materials that will be readily available to all and sundry in addition to promoting sustainable agriculture.

Girdle pod, its botanical name of the herb is *Mitracarpus scaber*. It is called (Irawo ile by Yoruba speaking people of Nigeria). It is a common perennial herb with a height of 30 cm. According to najagists.com (2018), some of the benefits of this herb include: It has antibacterial and antifungal activities which have been proven to treat skin infections. As a result of these properties, this herb can be used to treat skin infections like ringworms and scabies. Girdle pod can also be used to treat aches and pains such as headaches, toothaches, arthritis pain, amenorrhea, hepatitis as well as sexually transmitted diseases.

This paper was aimed at provide information on the nutrition potential phytochemical contents of Girdle pod (*Mitracarpus scaber*) Leaves

## 2. MATERIALS AND METHODS

### 2.1 Sources of materials

Girdle pod (*Mitracarpus scaber*) leaves were harvested from the Biological garden, Science Technology department, Federal Polytechnic, Offa, Kwara State, Nigeria. They were identified and authenticated by a Botanist in Biology /Microbiology Unit, Science Technology Department, Federal Polytechnic Offa. The leaves were dried in an Oven at 60<sup>o</sup> C for 12 hours and ground into powder using laboratory mortar and pestle. The powder obtained was then kept in a clean polythene bag for analysis.

All the chemicals used for analysis were analytical grades, supplied by BDH chemicals London.

### 2.2 Statistical analysis

#### 2.2.1 Methods

Proximate analysis, Determination of minerals, Determination of vitamins, and Determination of phytochemical contents were carried out using standard methods described by A.O.A.C (1990), Perkin-Elmer (1982), Association of Vitamin Chemists (1987) and Harborne (1998) respectively. Statistical analysis: Results of analysis were presented as mean  $\pm$ SD of three determinations.

## 3. RESULTS AND DISCUSSION

Table 1 shows the results of proximate analysis of Girdle pod (*Mitracarpus scaber*) Leaves. The results of proximate analysis of Girdle pod (*Mitracarpus scaber*) Leaves revealed that, Carbohydrate has the highest value of 69.68  $\pm$  2.03%, this was followed by crude protein (13.5  $\pm$  0.04%), moisture content (8.88  $\pm$  0.03%), crude fibre (3.92  $\pm$  2.03%), ash content (2.12  $\pm$  0.003%) and hexane extract content (1.9  $\pm$  0.003%).

**Table 1: Proximate composition of Girdle pod (*Mitracarpus scaber*) Leaves (dried weight)**

Parameters	Amount (%)
Carbohydrate	69.68 $\pm$ 2.03
crude protein	13.50 $\pm$ 0.04
moisture	8.88 $\pm$ 0.03
crude fibre	3.92 $\pm$ 2.03
ash	2.12 $\pm$ 0.003
hexane extract	1.90 $\pm$ 0.003

Each value is a mean of three determinations  $\pm$ SD.

Table 2 depicts the results of determination of vitamin content of Girdle pod (*Mitracarpus scaber*) Leaves. The results of determination of vitamin content of Girdle pod (*Mitracarpus scaber*) Leaves gave the followings; Vitamin A ( $0.021 \pm 0.001\text{mg}/100\text{g}$ ), Vitamin B<sub>1</sub> ( $0.173 \pm 0.001\text{mg}/100\text{g}$ ), Vitamin B<sub>2</sub> ( $0.047 \pm 0.002\text{mg}/100\text{g}$ ), Vitamin B<sub>6</sub> ( $0.368 \pm 0.001 \pm 0.001\text{mg}/100\text{g}$ ), Vitamin B<sub>12</sub> ( $0.863 \pm 0.001\text{mg}/100\text{g}$ ), Vitamin C ( $24.14 \pm 0.02\text{mg}/100\text{g}$ ), Vitamin E ( $0.603 \pm 0.001\text{mg}/100\text{g}$ ) and Vitamin K ( $0.005 \pm 0.001 \text{mg}/100\text{g}$ ).

**Table 2: Some mineral contents of Girdle pod (*Mitracarpus scaber*) Leaves(dried weight)**

Parameters	Amount (mg/100g)
Vitamin A	$0.021 \pm 0.001$
Vitamin B <sub>1</sub>	$0.173 \pm 0.001$
Vitamin B <sub>2</sub>	$0.047 \pm 0.002$
Vitamin B <sub>6</sub>	$0.368 \pm 0.001$
Vitamin B <sub>12</sub>	$0.863 \pm 0.001$
Vitamin C	$24.14 \pm 0.02$
Vitamin E	$0.603 \pm 0.001$
Vitamin K	$0.005 \pm 0.001$

Each value is a memean of three determinations  $\pm$ SD.

Table 3 reveals the results of mineral content of Girdle pod (*Mitracarpus scaber*) Leaves. The results of mineral content of Girdle pod (*Mitracarpus scaber*) Leaves depicted that, Potassium has the highest value of  $629.30 \pm 3.50\text{mg}/100\text{g}$  and this was followed by Calcium ( $31.88 \pm 1.02\text{mg}/100\text{g}$ ). Sodium also has the value of ( $28.25 \pm 0.21\text{mg}/100\text{g}$ ) while magnesium and manganese has the value of  $21.55 \pm 0.03\text{mg}/100\text{g}$  and  $4.84 \pm 0.02\text{mg}/100\text{g}$  respectively..

**Table.3: Some vitamins contents of Girdle pod (*Mitracarpus scaber*) Leaves(dried weight)**

Parameters	Amount (mg/100g)
Potassium	$629.30 \pm 3.50$
Calcium	$31.88 \pm 1.02$
Sodium	$28.25 \pm 0.21$
magnesium	$21.55 \pm 0.03$
manganese	$4.84 \pm 0.02$

Each value is a memean of three determinations  $\pm$ SD.

Table 4 shows the results of phytochemical analysis of Girdle pod (*Mitracarpus scaber*) Leaves. The results antinutrient analysis showed that alkaloid has a highest value of  $7.03 \pm 0.22\text{mg}/100\text{g}$  and this is followed by saponin  $0.42 \pm 0.01\text{mg}/100\text{g}$ , flavonoid  $0.153 \pm 0.003\text{mg}/100\text{g}$ , phytate  $0.144 \pm 0.001\text{mg}/100\text{g}$ , tannin  $0.28 \pm 0.003\text{mg}/100\text{g}$ , oxalate  $0.14 \pm 0.004\text{mg}/100\text{g}$  and cyanoglycoside  $0.003 \pm 0.001\text{mg}/100\text{g}$ .

**Table 4: Phytochemical contents of Girdle pod (*Mitracarpus scaber*) Leaves(dried weight)**

Parameters	Amount (mg/100g)
Alkaloid	$7.03 \pm 0.22$
saponin	$0.42 \pm 0.01$
flavonoid	$0.153 \pm 0.003$
phytate	$0.144 \pm 0.001$
tannin	$0.28 \pm 0.003$
oxalate	$0.14 \pm 0.004$
Cyanoglycoside	$0.003 \pm 0.001$

Each value is a memean of three determinations  $\pm$ SD.

#### 4. CONCLUSION & RECOMMENDATION

The present study as shown that, Girdle pod (*Mitracarpus scaber*) Leave is a good source of carbohydrate, vitamin C, potassium and calcium. It is recommended that Girdle pod (*Mitracarpus scaber*) Leave be used as an alternative source of food for animals and human. Further studies include determination of toxicity and biological evaluation of Girdle pod (*Mitracarpus scaber*) Leave.

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