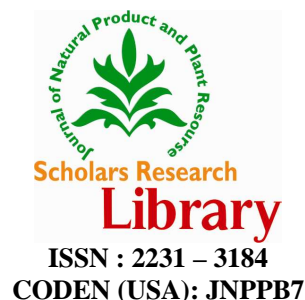




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Proximate and phytochemical analysis of leaf, stem and root of *Eugenia uniflora* (Surinam or Pitanga cherry)

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ABSTRACT

The leaves, stem and root of *Eugenia uniflora* were analyzed for their phytochemicals. The leaves were found to contain saponin, saponin glycosides, flavonoids, tannins and phenol. Anthracenes, balsams, alkaloids and volatile oils were absent. The stem contained phenol, tannin and flavonoid while the root contained just saponin. Proximate determination of moisture, ash, fat, crude fibre, nitrogen and carbohydrate by difference on the leaves, stem and root were carried out. For the leaves, moisture, ash, crude fibre, crude fat, fatty acid present in the crude fat, crude protein and carbohydrate content were, 7.01, 9.24, 1.27, 1.95, 1.60, 9.58 and 70.95 % respectively. The proximate values for the stem are 8.30, 3.57, 0.67, 1.52, 1.22, 6.21 and 79.73 % for moisture, ash, crude fibre, crude fat, fatty acid present in the crude fat, crude protein and carbohydrate content respectively. The values for the root are 7.50, 7.00, 5.15, 0.33, 7.23, 72.79 and 4.12 for moisture, ash, fat, crude fibre, crude protein, carbohydrate and fatty acid present in the crude fat respectively.

Key words : *Eugenia uniflora*, phytochemical and proximate analysis.

INTRODUCTION

The Surinam , Cayenne, Pitanga or Brazilian cherry (*Eugenia uniflora*) belongs to the family *Myrtaceae* [6]. Many fruits of the *Myrtaceae* have rich history of use as edibles and as traditional medicines in divergent ethnobotanical practices throughout the tropical and sub tropical world [3]. The cream coloured flowers are produced in profusion in the axils of the leaves. The fruits are 8-ribbed usually about one inch (2.5cm) in diameter [3]. The juicy sweet-acid pulp encloses one or two fairly large seeds . It is usually propagated by cuttings and seeds [9]. In Nigeria, it is found mostly in church compounds, schools and missionary hospitals from where it got the

name ose fada(Igbo-Rev. father's pepper) because of it's semblance to pepper. These plants have been used for treatment of a wide variety of ailments including coughs, diabetes, dysentery, inflammation and ringworm. The fruits are also used to make many food products. They (fruits) are high in vitamin C and are used as flavoring and base for jams and jellies[3]. The pulp is a good source of calcium and a fair source of phosphorus and iron.

This study seeks to carry out some proximate analysis (% moisture fat, crude fiber , nitrogen , % ash and carbohydrate) and phytochemical analyses on the leaf, stem and roots of the Nigerian species of *E. uniflora*.

MATERIALS AND METHODS

The leaves, stem and roots of *Eugenia uniflora* were collected between November and December, 2007. They were all properly dried indoors in an airy place, crushed, powdered and stored in dry opaque bottles. Moisture, ash, crude fibre and fat content were determined using the Association of Official Analytical Chemists (AOAC,1990) methods while the nitrogen was determined using the micro- Kjeldahl process as described by Pearson, (1976) from which the crude protein was calculated as % N x 6.25 .The carbohydrate content was determined by difference, that is 100- (moisture, ash, crude fibre, fat and crude protein) . A factor of 0.8 is used to convert the total fat to fatty acid (to get the fatty acid in the total fat).

The phytochemicals in the leaves, stem and root were determined (using standard phytochemical methods of testing) by boiling the dry powdered samples for twenty minutes, filtered and the filtrates used to test for phenols, tannins, saponins, glycosides, flavonoids, sterols, resins, balsams, anthracenes, alkaloids and volatile oil as shown in table 2 .

RESULTS AND DISCUSSION

Table : 1 Proximate analysis of the leaf, stem and root of pitanga

CHERRY(dry weight) Parameter	Value(%)		
	Leaf	Stem	Root
Moisture	7.01	8.30	7.50
Ash	9.24	3.57	7.00
Fat	1.95	1.52	5.15
Crude fibre	1.27	0.67	0.33
Crude protein	9.58	6.21	7.23
Carbohydrate	70.95	79.73	72.79
Fatty acid present in the crude fat	1.60	1.22	4.12

The proximate percentage composition of the leaves, stem and root of *E.uniflora* are shown in Table 1. Total fatty acid of 1.60 and 1.22 for the leaves and stem are low and consequently heart friendly . The crude fibre content of the leaves makes it adequately good as fodder for animals. The crude protein and carbohydrate content of all parts of this plant makes the plant interesting for compounding of livestock feed.

Table:2 Phytochemical analysis of the leaves, stem and root

Phytochemical	Leaf	Stem	Root
Phenol	+	+	-
Triterpenes	+	-	-
Tannin	+	+	-
Glycosides	+	-	-
Flavonoids	+	+	-
Saponin	-	-	+
Alkaloid	-	-	-

Key : + = present
- = absent

The phytochemical analyses conducted according to Sofowora (1976), are shown in Table 2 above. The leaves contain phenol, triterpenes, tannins, glycosides and flavonoids. This supports the findings of Jacob *et al.*, (1996). The phenol, triterpenes and tannin in the leaves may be responsible for its use in the treatment of cough, dysentery, inflammations and ringworm (Frankel *et al.* 1993, Jacob and Burri 1996 and Sterberg, 1997 in Reynertson *et al.*, 2005).

Also, according to Reynertson *et al.* (2005), flavonoid is the most active component of *E.uniflora* and poly phenolic compounds like flavonoids have enormous range of biological activity and are known to inhibit oxidative damage in-vivo better than the classical vitamin and antioxidants. They also reported that "in plants, they protect against lipid peroxidation and UV damage that can affect tropical fruits growing under severe conditions including high heat and intense sunlight". Flavonoids are also responsible for colour in plants. The stem also contains phenol, tannins and flavonoid, while the root according to the tests conducted in this work contains only saponins.

CONCLUSION

From the result of this work, the leaves of *Eugenia uniflora* were found to contain saponin, saponin glycosides, flavonoids, tannins and phenol. Anthracenes, balsams, alkaloids and volatile oils were absent.

The stem contained phenol, tannin and flavonoid while the root contained just saponin. Proximate determination of percentage moisture, ash, fat, crude fibre, nitrogen and carbohydrate by difference on the leaves, stem and root showed that, for the leaves, the values were, 7.01, 9.24, 1.27, 1.95, 1.60, 9.58 and 70.95 % respectively.

For the stem the values are 8.30, 3.57, 0.67, 1.52, 1.22, 6.21 and 79.73 % respectively while the values for the root are 7.50, 7.00, 5.15, 0.33, 7.23, 72.79 and 4.12 for moisture, ash, fat, crude fibre, crude protein, carbohydrate and fatty acid present in the crude fat respectively.

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