

RESEARCH ARTICLE

Proximate and Phytochemical screening of *Alternanthera sessilis* (L.) R. Br. ex DC. (Amaranthaceae) – An underutilised leafy vegetable

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| Manuscript details: | ABSTRACT |
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| <p>Received: 12.08.2017 Accepted: 15.12.2017 Published : 31.12.2017</p> <p>Editor: Dr. Arvind Chavhan</p> <p>Cite this article as: Umate SK and Marathe VR (2017) Proximate and Phytochemical screening of <i>Alternanthera sessilis</i> (L.) R. Br. ex DC. (Amaranthaceae) – An underutilised leafy vegetable; <i>International J. of Life Sciences</i>, 5 (4): 703-705.</p> <p>Acknowledgement Authors are thankful to Principal, N.E.S. Science College, Nanded for providing Laboratory facilities.</p> <p>Copyright: © 2017 Author (s), This is an open access article under the terms of the Creative Commons Attribution-Non-Commercial - No Derivs License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.</p> | <p>Green leafy vegetables occupy an important place among the food crops as these provides promising nutritive value, which can nourish the increasing human population. <i>Alternanthera sessilis</i> (L.) R. Br. ex DC. belonging to family Amaranthaceae is a widely distributed perennial plant throughout the Maharashtra. Its leaves and young shoots are eaten as vegetable in Konkan region of Maharashtra and many other parts of India. It has been used in Indian traditional system of medicine since a long time in diseases due to vitiated blood, skin diseases and ulcers. Present study deals with the analysis of proximate value and phytochemicals from leaf of <i>A. sessilis</i>. Results revealed that it has 82.5 % moisture content, 36.16 % carbohydrates, 16.60 % proteins etc. Phytochemical studies showed positive result for alkaloids, steroids, phenolics, flavonoids, tannins, caumarins, phobatanins, terpenoids, cardenolins and saponins. This study will help in standardization of plant and detection of adulterants.</p> <p>Keywords: <i>Alternanthera sessilis</i>, Phytochemical, Proximate value, wild vegetable.</p> |
| | <p>INTRODUCTION</p> <p>Wild vegetables refer to the species which are not cultivated at large scale commercially. They are grown on waste land and collected from their natural habitat by tribal communities and used as for consumption or used as source of food. <i>Alternanthera sessilis</i> (L.) R. Br. ex DC. is belonging to family Amaranthaceae locally known as <i>Kateri</i> or <i>Kanchari</i> in Maharashtra. It is an annual prostate herb and widespread throughout the tropics and subtropics.</p> <p>It is a popular leafy vegetable, its leaves and young shoots are eaten as vegetable (Chandrika <i>et al.</i>, 2006), used for preparation of main dish in Konkan region of Maharashtra (Khan and Kakde, 2014) and cooked in soup in Sri Lanka and also used a s traditional medicine in China, Taiwan and India (Anitha and Kanimozhi, 2012).</p> |

A. sessilis is known as *Matyakshika* in Ayurvedic medicine (Shyamala *et al.*, 2005). It has been used in Indian traditional system of medicine since a long time in diseases due to vitiated blood, skin diseases and ulcers (Anonymous, 1985; Anonymous, 1999). The leaves and shoots are boiled and drunk as an antihypertensive remedy (Acharya and Pokhrel, 2006). It has been reported to possess anti-microbial, molluscicidal, a moderate antimutagenic, anti-diarrhoeal, hepatoprotective, cytotoxic and antiviral activities (Devi *et al.*, 2003). Haematinic activity of *Alternanthera sessilis* leaf has carried out in mice and rats (Erna and Marina, 2010). Stems can be used to reduce high blood glucose levels in diabetic patients and to alleviate pain (Hossain *et al.*, 2014).

Green leafy vegetables occupy an important place among the food crops as these provides promising nutritive value, which can nourish the ever increasing human population (Sheela *et al.*, 2004). Hence it is essential to carry out the investigation on this plant. Present study deals with proximate and phytochemical analysis of Leaf of *A. sessilis* which helps in standardization and detection of adulterants.

MATERIALS AND METHODS

Collection and identification of plant material

The Leaves of *A. sessilis* were collected from nearby areas of Nanded, Maharashtra from July to August 2016, identified at PG Department of Botany, NES Science College, Nanded by using standard flora (Naik, 1998). Plant material was properly shade dried in an airy place, crushed, powdered and stored in dry glass container.

Proximate analysis

Moisture content, ash yield and solubility tests were determined using the Association of Official Analytical Chemist's methods (Anonymous, 1998; Khandelwal and Sethi, 2013; Shaikh and Syed, 2015). The crude proteins, carbohydrates, fat was estimated using standard methods (Thimmaiah, 2012). Nutritive value was expressed in Kilocalories/ 100 gm of dry weight of leaf and calculated by using the given formula: Nutritive value = (4 X %Protein) + (9 X %Crude fat) + (4 X %Total carbohydrate) (Shukla *et al.*, 2012).

Phytochemical analysis

The phytochemicals were screened by colour test

using standard prescribed methods [Harborne, 1998; Trease and Evans, 2002].

RESULTS AND DISCUSSION

Proximate analysis

Moisture content of *A. sessilis* leaf was determined and it is found to be 82.5 %, the ash content is 13.06 %, high solubility of ash was found in acid than water, sample solubility in 1% NaOH and 1% HCl were confirmed, carbohydrates, protein, fat were also determined and nutritive value calculated in Kcal (Table 1).

Table 1: Proximate analysis of *Alternanthera sessilis* Leaf

| Sr. No. | Proximate Evaluation | Values (%) |
|---------|------------------------|------------|
| 1 | Moisture content | 82.5 |
| 2 | Total Ash | 13.06 |
| 3 | 1% NaOH Solubility | 58 |
| 4 | 1% HCL Solubility | 48 |
| 5 | Hot water solubility | 60 |
| 6 | Cold water solubility | 58 |
| 7 | Carbohydrate | 36.16 |
| 8 | Proteins | 16.60 |
| 9 | Fat | 4 |
| 10 | Nutritive value (Kcal) | 247.04* |

* Kilocalories/ 100 gm of dry weight

Table 2: Phytochemical analysis of *Alternanthera sessilis* Leaf

| Sr. No. | Phytocompounds | <i>Alternanthera sessilis</i> |
|---------|-------------------|-------------------------------|
| 1 | Alkaloids | +++ |
| 2 | Leucoanthocyanins | - |
| 3 | Iridoids | - |
| 4 | Emodins | - |
| 5 | Aucumbins | - |
| 6 | Polyoses | - |
| 7 | Polyurenoids | - |
| 8 | Phenolics | +++ |
| 9 | Tannins | +++ |
| 10 | Anthraquinone | - |
| 11 | Caumarins | +++ |
| 12 | Phlobatannins | ++ |
| 13 | Flavonoids | +++ |
| 14 | Terpenoids | ++ |
| 15 | Steroids | + |
| 16 | Cardenolins | + |
| 17 | Juglone | - |
| 18 | Saponins | ++ |

(+++ Strong, ++ Moderate, + Weak, - Absent)

Qualitative phytochemical screening

The qualitative tests for various phytochemicals shows positive results for alkaloids, tannins, flavonoids, caumarins, phenolics, phlobatannins, terpenoids, steroids, cardenolins and saponins (Table 2). Presence of these phytochemical supported medicinal importance of *A. sessilis* Leaf. Presence of phenolics and flavonoids indicates that leaf may contain antioxidant like Gallic acid, Quercetin and Rutin. Presence of such antioxidants supports its edible nature and it could be potential source of nutraceutical and natural antioxidant (Marathe and Umate, 2016).

CONCLUSION

The present investigation shows the presence of various bioactive compounds which has important role in nutritive value of plant and proves its edible nature. Proximate analysis helps in standardization and detection of adulterants. More investigation and evaluation are needed in view of its nutraceutical properties.

Conflicts of interest: The authors stated that no conflicts of interest.

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