International Journal of Plant and Environment
Vol. 4, No. 1 (January, 2018), 97-104

# Study on Some Leafy Vegetables and their Medicinal Uses at Chanchal Sub - Division of Malda District, West Bengal

**Sudip Some* and Jaydip Mukherjee**

Department of Life Sciences, Chanchal Siddheswari Institution (H.S.), Chanchal, Malda-732123, West Bengal, INDIA

**Publication Info**

***Article history***:
Received: 28.09.2017
Accepted: 01.01.2018
DOI: https://doi.org/10.18811/ijpen.v4i01.11617

***Key words***:
Chanchal
Conservation
Documentation
Medicinal importance
Wild leafy vegetables

****Corresponding author:***
Mr. Sudip Some
Mobile: +91-9474347483
Email: ssome.csi@gmail.com

**Abstract**

Wild leafy vegetables are consumed by general people in both form of crude extract and recipe in a regular fashion since century long. Ethnic communities have immense knowledge on the medicinal and nutritional values of these vegetables. These vegetables are earning source of socio- economic backward rural people. People buy these vegetables from market or collect directly from natural habitat. An investigation was carried out for documentation of wild leafy vegetables at Chanchal of Malda district, West Bengal. Thirty two species of such vegetables belong to twenty nine families of twenty eight genera had been documented through this investigation carried in and around of study area exploring their huge nutritional and medicinal importance. Majority of wild leafy vegetables (53%) are used for curing of several ailments in study area.

## 1. Introduction

India is rich in diversity of wild and cultivated vegetables. Leafy vegetable covers major area in nutritional and pharmacological research (Chauhan *et al*., 2014). Nutrient and immunity deficiency among people are global problem which is caused due to poverty and unawareness. Wild leafy vegetables almost overcome these problems (Flyman and Afolayan, 2006). Green vegetables are rich in several nutrients. Many rural people are well experienced to cultivate vegetables in their kitchen garden or in agricultural field (Misra *et al*., 2008). It is proved from a nutritional research that leafy vegetables are full of protein, vitamins and sugar (Misra and Misra, 2014). It is reported that people of South Africa eat several wild leafy vegetables like *Chenopodium album, Sonchus asper, Solanum nigrum* and *Urtica urens* for the demand of nutrients like protein, fiber, calcium, potassium, phosphorus and zinc, that they possess (Afolayan and Jimoh, 2009). Antioxidant that is present in leafy vegetables cuts off the risk of several health problems in human population (Kumar *et al.,* 2013). The uses of wild leafy vegetables are an indigenous culture of society (Jana, 2007). Several ethnic communities have been used these vegetables in regular fashion not only for their nutritional urge but for their health care system also. These vegetables are placed in their food recipe from the point of their traditional knowledge (Seema, 2015). Ethnic communities in Brahmaputra valley of Assam have been used twenty two wild plants as ethno medicine by the recommendation of local healers (Barua *et al.,* 2007). Health of Santhal and Paharia tribes are nourished by consuming of sixty two species wild leafy vegetables in Santhal Pargana region of Jharkhand, India (Singh, 2016). Forty five species of wild leafy vegetables fulfill the requirements of alternative nutritional supplements in Hassan District of Karnataka, India (Prashanthkumar and Shiddamallayya, 2014).

Traditional knowledge of wild edible plants and their utilization among ethnic communities like Rajbanshi, Kheria, Oraon, Rabha and Santhal are documented from Koch Bihar District of West Bengal. One hundred twenty five wild plant species are used by these communities as edible vegetables (Bandyopadhyay and Mukherjee, 2009). The exploration of traditional leafy vegetables is recorded by 58 plant species in Nadia District of West Bengal (Das and Mukherjee, 2015). It is reported that 53 wild plant species have been used by native tribes for local health care in the District of Malda, West Bengal (Saha *et al*., 2014b). Herbal therapy for health care is also reported from Chanchal block of Malda. Forty nine plant species are using for treatment of 25 ailments among local people (Saha *et al*., 2014a). But non indigenous vegetables are dominated in human diet chart than

indigenous vegetables in modern society (Stephen *et al*., 2015). Some rural people sell wild leafy vegetables in daily market and thus earn their livelihood. They collect these vegetables from natural habitat. Women are playing pivotal role for sharing the knowledge of wild leafy vegetables to the community (Kidane *et al*., 2014). It plays an important role for upliftment of socio-economic status of rural people (Pradhan and Tamang, 2015; Thongam *et al.,* 2016). Malda district is rich in diversity of medicinal plants. (Choudhury, 2009). Two hundred eighty one plant species having medicinal importance are recorded by an extensive survey from various aquatic and terrestrial habitat of Malda, West Bengal (Chowdhury, 2014). Santal tribe of this district is using 73 plant species as folk medicine for curing of different ailments in regular fashion (Chowdhury and Mukherjee, 2010). The local and tribal communities in remote areas of this district are consuming 86 wild plants in their diet. Among these plants 84 are Angiosperms and rests are Pteridophytes. Leaves and fruits are most usable parts among these plants (Chowdhury and Mukherjee, 2012). The new generation customers are not well aware about wild leafy vegetables in daily market. They are informed from sellers during purchasing and take as medicinal aspect (Authors experiences during data collection). So, growing of mass awareness about these vegetables in society is utmost necessary. Conservation of these vegetables in their natural habitat or in herbal hub has immense importance. An initiative is undertaken for documentation of wild leafy vegetables found at Chanchal in the district of Malda, West Bengal with special reference to their medicinal uses.

## 2. Methodology

### *2.1. Study area*

Chanchal is the second sub divisional headquarter of Malda district. It is situated 66 Km. away by road from district headquarter i.e., English Bazar. Chanchal- I and II block ($25^0 23^/ N\ 88^0 0^/ E$) are under the jurisdiction of Chanchal Police Station (Saha *et al*., 2014a) (Fig. 1). The subdivision is consisted of rural areas and demographically dominated by several ethnic communities (Samad, 1993). Chanchal is located at "Tal" under three physiographic regions of Malda district. Tal is characterized by several wetlands and ditches. Therefore this region is rich in flora and fauna diversity (Chowdhury, 2009, 2014; Chowdhury and Mukherjee, 2010, 2012). The people from several areas come in and around of Chanchal daily markets for selling and purchasing their essential commodities for their livelihood.

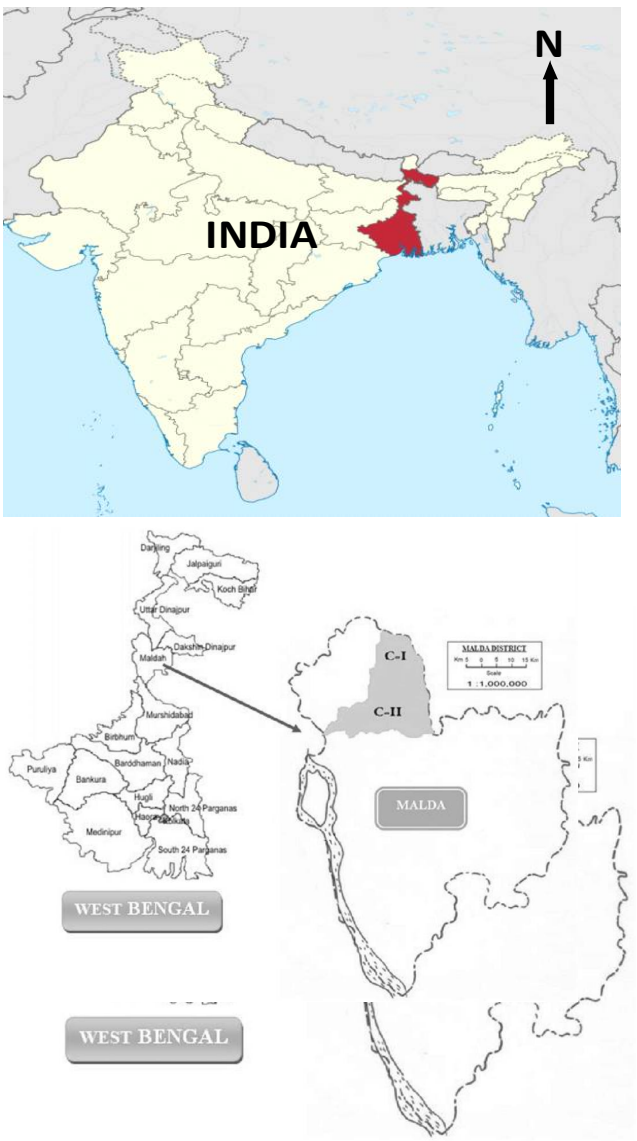


**Fig. 1:** Study area in Malda district of West Bengal (India) (Saha *et al.,* 2014a).

### *2.2. Execution of survey*

It was conducted by two ways. A. Market survey and B. Household survey. Market survey was conducted during December, 2016 to August, 2017 in Chanchal, Paharpur, Kaligram and Ashapur daily markets. Information was collected from both wild leafy vegetable sellers and customers (after purchased). Eighteen aged persons including thirteen women were recorded as only involved in selling wild leafy vegetables in different Sabji Bazar (Fig. 2). During household survey, fifty families of various localities Bidyanandapur, Sahurgachi, Hobinagar and

**Fig. 2:** Photographs of wild leafy vegetables sellers in daily market of Chanchal.

Maniknagar from Chanchal- II block and Amlapra, Barogachia, Boirgachi, Duliabari, Haripara, Khelenpur and Sihipur from Chanchal-I block were selected. Information was collected through random interview and semi structured questionnaires.

### *2.3. Identification of wild leafy vegetables*

Wild leafy vegetables were collected with the help of local people including sellers. Photographs of these plants were taken during collection. Then these vegetables were identified and authenticated with the help of standard literature and information (Prain, 1903; Grierson and Long, 1983; Chauhan, 1996; Anonymous, 1997; Sur, 2008; Naidu, 2012; http://www.theplantlist.ogr, 2013). To conserve some of these medicinally important plants in ex-situ manner, a medicinal plant garden has been established in the premises of Chanchal Siddheswari Institution (CSI) in collaboration with National Service Scheme, CSI unit (Fig. 3) and herbarium sheets of these plants will be deposited in deemed CSI herbarium shortly.

## 3. Results and Discussion

Thirty two species of 29 families representing 28 genera wild leafy vegetables were documented from various localities of Chanchal blocks. All the recorded plants are tabulated along with vernacular name, families in Table 1. Among these plants 2 were Pteridophytes and rests were Angiosperms. Documentation had showed that Amaranthaceae family emerged as major consuming vegetables among

**Fig. 3:** Photographs of Medicinal plants garden in Chanchal Siddheswari Institution, Malda.

local people with its 5 species followed by 3 in Convolvulaceae and 2 in Commelinaceae. Photographs of documented plants were presented in Figure 4. In local dialects these vegetable is known as "Shak". The recipes of these vegetables are consumed by local people as curry, chutney, fry, stew and vada. The Hindu customs in turns advocates the consuming of such leafy vegetables in form of "14 Shak" (14 leaves all together) before Dewali festival for increasing their immunity power. Sometimes it has been taken as crude or decoction form.

**Table 1:** List of wild leafy vegetables at Chanchal.

| S.N. | Botanical Name | Vernacular Name (Bengali) | Family |
|---|---|---|---|
| 1 | *Alternanthera paronychioides* A. St.-Hil | Chunchi | Amaranthaceae |
| 2 | *Alternanthera philoxeroides* (Mart.) Gris. | Sanchi | Amaranthaceae |
| 3 | *Alternanthera sessilis* (L.) DC. | Chenchi | Amaranthaceae |
| 4 | *Amaranthus spinosus* L. | KantaKhuria | Amaranthaceae |
| 5 | *Amaranthus viridis* Hook.f. | Khuria | Amaranthaceae |
| 6 | *Azadirachta indica* A. Juss. | Neem | Meliaceae |
| 7 | *Bacopa monnieri* (L.) Pennel. | Brambhani | Plantaginaceae |
| 8 | *Boerhavia diffusa* L. | Punarvaba | Nyctaginaceae |
| 9 | *Basella rubra* L. | Pui | Basellaceae |
| 10 | *Centella asiatica* (L.) Urban | Thankuni | Apiaceae |
| 11 | *Chenopodium album* L. | Bathua | Chenopodiaceae |
| 12 | *Clerodendrum inerme* (L.) Gaertn. | Bhat | Verbenaceae |
| 13 | *Coccinia grandis* (L.) Voigt. | Telakuch | Cucurbitaceae |
| 14 | *Colocasia esculenta* (L.) Schott. | Kachu | Araceae |
| 15 | *Commelina benghalensis* L. | Kankhore | Commelinaceae |
| 16 | *Commelina diffusa* Burm.*f*. | Kanatore | Commelinaceae |
| 17 | *Diplazium esculentum* (Koe. *ex* Retz.)Sw. | DhekiShak | Athyriaceae |
| 18 | *Enydra fluctuans* DC. | Helencha | Asteraceae |
| 19 | *Glinus oppositifolius* (L.) A. De. | Geema | Molluginaceae |
| 20 | *Hygrophila auriculata* (Sch.) Heine | Kulekhara | Acanthaceae |
| 21 | *Ipomoea aquatica* Forsk. | JalKolmi | Convovulaceae |
| 22 | *Ipomoea purpurea* (L.) Roth. | Dudhloi | Convovulaceae |
| 23 | *Leucas zeylanica* (L.) W.T. Aiton | Dulfi | Lamiaceae |
| 24 | *Marsilea minuta* L. | Sushni | Marsileaceae |
| 25 | *Moringa oleifera* Lam. | Sajna | Moringaceae |
| 26 | *Operculina turpethum* (L.) Silva Manso. | Dudhkolmi | Convovulaceae |
| 27 | *Oxalis corniculata* L. | Amrul | Oxalidaceae |
| 28 | *Paederia foetida* L. | Gandhavedal | Rubiaceae |
| 29 | *Portulaca oleracea* L. | Nuncha | Portulacaceae |
| 30 | *Scoparia dulcis* L. | Chinipata | Scrophulariaceae |
| 31 | *Solanum americanum* Mill. | Bhutkunia | Solanaceae |
| 32 | *Tinospora cordifolia* (Thunb.) Miers. | Gulancha | Menispermaceae |

Economically backward people have been collected these vegetables directly from natural habitat for their needs (Fig. 5). *Chenopodium album* and *Solanum nigrum* are common wild leafy vegetables both in our study area and in South Africa (Afolayan and Jimoh, 2009). It was found that wild leafy vegetables had mainly used by people for their medicinal requirements beside nutritional urge. Seventeen types of leafy vegetables are frequently used for curing of several ailments by local people in the study area (Table 2).

In this investigation gastrointestinal disorders are cured by using 35% of total studied medicinally important vegetables. In spring young leaf of *Azadirachta indica* is most popular for preventing chicken pox and other dermal infection. Leaves of *Bacopa monnieri* are popular among students. Edema is cured by the extraction of *Boerhavia diffusa.* Diabetic patients accustom with the recipe of Telakuch shak (*Coccinia grandis*). Bitter tested leaves are used as blood purifier. Leaves of *Hygrophila auriculata* are used by village women to prevent the anemic condition due to menorrhagia. The infection in oral cavity is reduced by chewing the leaves of *Leucas zeylanica.* Insomnia is overcome by using *Marsilea minuta*. Decoction of *Moringa oleifera* is frequently used in hypertension. Leaves of *Tinospora cordifolia* contain anti-pyrogenic agent. Our result had showed 65% resemblance with an often similar study carried out in Dakshin Dinajpur district (Choudhury *et al*., 2014). Forty-five wild leafy

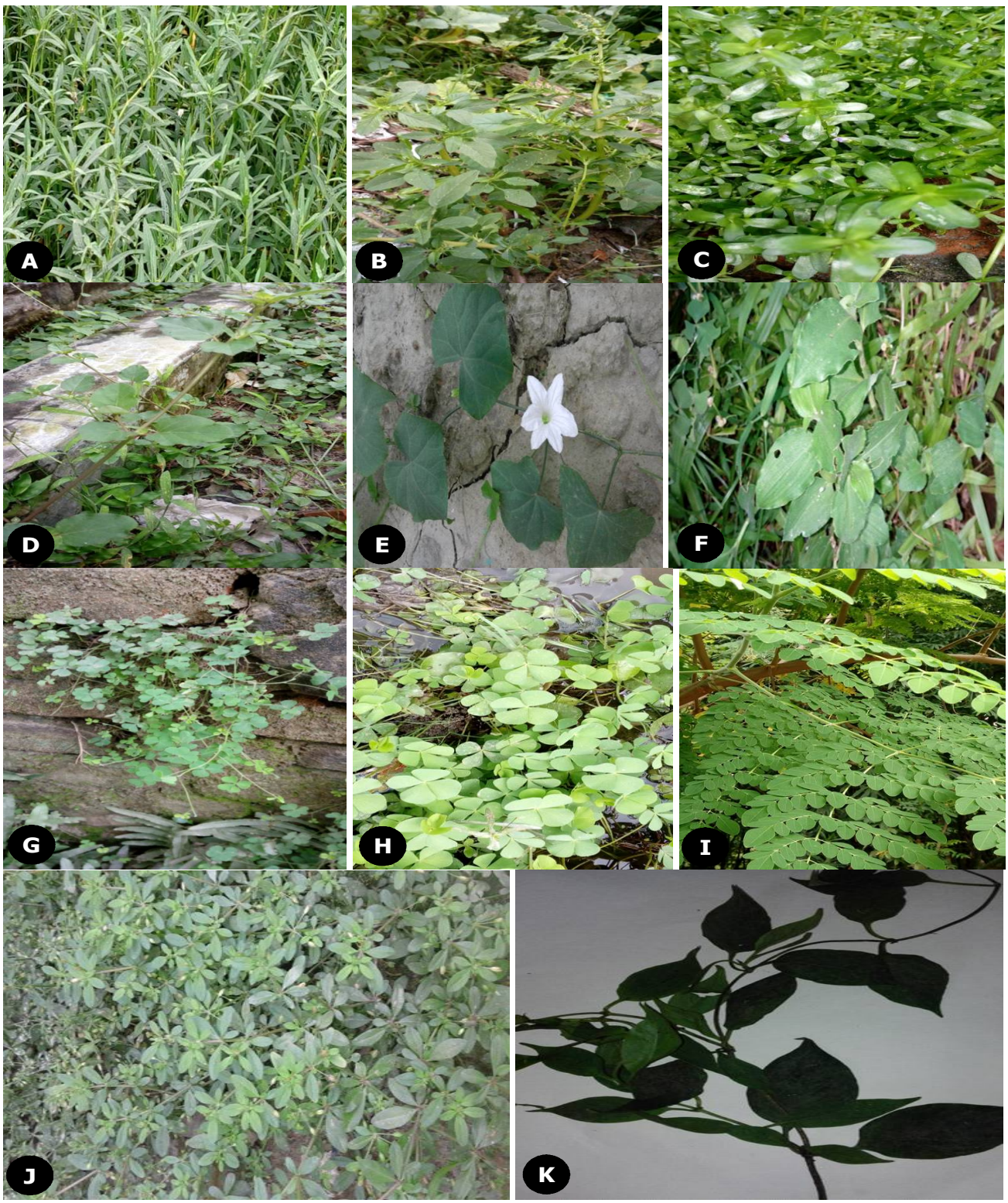


**Fig. 4:** Photographs of some wild leafy vegetables. A. *Alternanthera philoxeroides,* B. *Amaranthus spinosus,* C. *Bacopa monnieri,* D. *Boerhavia diffusa,* E. *Coccinia grandis,* F. *Commelina benghalensis,* G. *Oxalis corniculata,* H. *Marsilea minuta,* I. *Moringa oleifera,* J. *Glinus oppositifolius,* K. *Paederia foetida.*

**Fig. 5:** Village woman collects wild leafy vegetables from natural habitat.

**Table 2:** Medicinally important wild leafy vegetable in study area.

| S.N. | Botanical Name | Family | Parts Used | Medicinal Uses |
|---|---|---|---|---|
| 1 | *Amaranthus spinosus* L. | Amaranthaceae | Root | Anti-dysenteric |
| 2 | *Azadirachta indica* A.Juss. | Meliaceae | Leaf | Anti-infective |
| 3 | *Bacopa monnieri* (L.)Pennel. | Plantaginaceae | Leaf and Tender Shoot | Memory improver |
| 4 | *Boerhavia diffusa* L. | Nyctaginaceae | Leaf | Anti-inflammatory |
| 5 | *Centella asiatica* (L.)Urban | Apiaceae | Leaf | Anti-amoebic |
| 6 | *Clerodendrum inerme* (L.) Gaertn. | Verbenaceae | Leaf | Anti-helminthic |
| 7 | *Coccinia grandis* (L.) Voigt. | Cucurbitaceae | Leaf | Anti-diabetic |
| 8 | *Enydra fluctuans* DC. | Asteraceae | Leaf and Tender Shoot | Blood purifier |
| 9 | *Glinus oppositifolius* (L.) A.De. | Molluginaceae | Leaf and Tender Shoot | Blood purifier |
| 10 | *Hygrophila auriculata* (Sch.) Heine | Acanthaceae | Leaf | Anti-anemic |
| 11 | ***Leucas zeylanica*** (L.) W.T.Aiton | Lamiaceae | Leaf | Anti-infective in oral cavity |
| 12 | ***Marsilea minuta*** L. | Marsileaceae | Leaf | Antidepressant |
| 13 | *Moringa oleifera* Lam. | Moringaceae | Leaf | Reduce high blood pressure |
| 14 | *Operculina turpethum* (L.)Silva Manso | Convolvulaceae | Leaf and Tender Shoot | Laxative |
| 15 | *Oxalis corniculata* L. | Oxalidaceae | Leaf and Tender Shoot | Anti-amoebic |
| 16 | *Paederia foetida* L. | Rubiaceae | Leaf | Carminative |
| 17 | *Tinospora cordifolia* (Thunb.) Miers. | Menispermaceae | Leaf and Tender Shoot | Febrifuge |

vegetables have been documented from Barind region of Malda district. Barind region is dominated by Tribal population (Biswas and Das, 2011). But in our study we had documented 32 species in Tal region. These plants are frequently used by the local people of this region. There is great similarity of used vegetables between two regions. Some of medicinally important species that were found in our study is frequently used by Santal tribe of Malda district (Chowdhury and Mukherjee, 2010). The previous study at Chanchal had showed that *Coccinia grandis* and *Amaranthus spinosus* are used for curing of Rheumatism and Leucorrhea, respectively (Saha *et al*., 2014a). But our findings suggest another different role for each of these species, cited in Table 2. Edible species of Pteridophyta were recorded as same with earlier study (Chowdhury and Mukherjee, 2012).

## 4. Conclusion

Wild leafy vegetables are used in daily life by various means; but knowledge of their medicinal values and nutritional importance is still confined within a small population. Ethnic communities still use these vegetables from their traditional knowledge. The knowledge is transmitted from prudent to rising generation. Due to lack of communication people of remote area collects these directly from natural habitat for nutritional urge. Due to the mass ignorance of such vegetables are not properly cultivated or used in daily life. So, a proper strategy should have been made on this account. The selling of these vegetables by financially backward people in daily market is surely an earning opportunity for them. Routine cultivation of these vegetables will induce their yield and it in turns exerts a pivotal impact on socio-economic background of these people.

## Acknowledgement

The authors are thankful to local people including vegetable sellers for sharing the information and also grateful to Mr. Asrarul Hoque, Headmaster, Chanchal Siddheswari Institution for encouragement.

## References

Afolayan, A.J. and Jimoh, F.O. 2009. Nutritional quality of some wild leafy vegetables in South Africa. *International Journal of Food Sciences and Nutrition* **60(**5):424-431.

Anonymous, 1997. *Flora of West Bengal*, Vol.-I, Botanical Survey of India, Kolkata.

Bandyopadhyay, S. and Mukherjee, S.K. 2009. Wild edible plants of Koch Bihar district, West Bengal. *Natural Product Radiance* **8**(1):64-72.Barua, U., Hore, D.K. and Sarma, R. 2007. Wild edible plants of Majuli Island and Darrang districts of Assam. *Indian Journal of Traditional Knowledge* **6**(1):191-194.

Biswas, K. and Das, A.P. 2011. Documentation of wild leafy vegetables from the tribal dominated parts of Malda District of Paschimbanga, India In: Ghosh, C. and Das, A.P. (Eds.) *Recent Studies in Biodiversity and Traditional Knowledge in India*, Gour College, Malda (India), pp. 301-306.

Chauhan, A.S. 1996. Flowering plants of Eastern India and North Bengal. In: *Flora of India. Introductory* Vol. I; Pt-I, Botanical Survey of India, Kolkata, pp. 251-294.

Chauhan, D., Shrivastava, A.K. and Patra, S. 2014. Diversity of leafy vegetables used by tribal peoples of Chhattisgarh, India. *International Journal of Current Microbiology and Applied Science* **3**(4):611-622.

Chowdhury, M. 2009. *Plant Diversity and Vegetation Structure in the Wetlands of Malda District of West Bengal, India*. Ph.D. Thesis, North Bengal University.

Chowdhury, M. 2014. Preliminary screening of medicinal plants growing in different habitats of Malda District of West Bengal, India. *NBU Journal of Plant Sciences* **8**(1):37-51.

Chowdhury, M. and Mukherjee, R. 2010. Ethnomedicinal survey of Santal tribes of Malda District of West Bengal, India. *Journal of Economic and Taxonomic Botany* **34**(3):602-606.

Chowdhury, M. and Mukherjee, R. 2012. Wild edible plants consumed by local communities of Malda District of West Bengal, India. *Indian Journal of Science and Research* **3**(2):163-170.

Chowdhury, T., De Sarkar, D. and Roy, S.C. 2014. Local folk use of plants in Dakshin Dinajpur District of West Bengal, India. *International Research Journal of Biological Sciences* **3**(5):67-79.

Das, D.S. and Mukherjee, S.K. 2015. Traditional leafy vegetables of Nadia District of West Bengal India. *International Journal of Pharmaceutical Research and Bio-Science* **4**(3):327-355.

Flyman, M.V. and Afolayan, A.J. 2006. The suitability of wild vegetables for alleviating human dietary deficiencies. *South African Journal of Botany* **72**(4):492-497.

Grierson, A.J.C. and Long, D.G. 1983. *Flora of Bhutan Including a Record of Plants from Sikkim and Darjeeling* (Vol.-2), Royal Botanic Garden, Edinburg, pp. 640.

Jana, J.C. 2007. Use of traditional and underutilized leafy vegetables of Sub-Himalayan Terai region of West Bengal. *Acta Horticulture* **752**: doi 10.17660/ActaHortic.2007.752.107.

Kidane, B., Maesen, L.J.G.V., Asfaw, Z., Sasef, M.S.M. and Andel, T.V. 2014. Wild and semi-wild leafy vegetables used by the Maale and Ari ethnic communities in southern Ethiopia. *Genetic Resources and Crop Evolution* **62**(2):221-234.

Kumar, A.C.K., Divyasree, M.S., Joshna, A., Lakshmi, S.M. and Kumar, D.S. 2013. A Review on South Indian edible leafy vegetables. *Journal of Global Trends in Pharmaceutical Sciences* **4**(4):1248-1256.

Misra, S. and Misra, M.K. 2014. Nutritional evaluation of some leafy vegetable used by the tribal and rural people of South Odisha, India. *Journal of Natural Product Plant Resource* **4**(1):23-28.

Misra, S., Maikhuri, R.K., Kala, C.P., Rao, K.S. and Saxena, K.G. 2008. Wild leafy vegetables: A study of their subsistence dietetic support to the inhabitants of Nanda Devi Biosphere Reserve, India. *Journal of Ethnobiology and Ethnomedicine* **4**:15.

Naidu, V.S.G.R. 2012. *Hand Book on Weed Identification*. Directorate of Weed Science Research. Indian Council of Agricultural Research, Jabalpur (India), pp. 354.

Pradhan, S. and Tamang, J.P. 2015. Ethnobiology of wild leafy vegetables of Sikkim. *Indian Journal of Traditional Knowledge* **14**(2):290-297.

Prain, D. 1903. *Bengal Plants,* Vol. I-II. Botanical Survey of India, Kolkata (India), pp. 1319.

Prashanthkumar, G.M. and Shiddamallayya, N. 2014. Documentation of wild leafy vegetables of Hassan District, Karnataka. *International Journal of Pure and Applied Bioscience* **2**(1):202-208.

Saha, M.R., Kar, P., Sen, A. and De Sarkar, D. 2014a. Ethnobotany of Chanchal Block of Malda District of West Bengal (India): Plants used in local healthcare. *Pleione* **8**(2):381-390.

Saha, M.R., De Sarker, D., Kar, P., Sen Gupta, P. and Sen, A. 2014b. Indigenous knowledge of plants in local healthcare management practice by tribal people of Malda District, India. *Journal of Intercultural Ethnopharmacology* **3**(4):179-185.

Samad, A. 1993. *Zela Maldaher Janajati*. In: Zela Maldaher Itihas O Maldaha Samagra. Visva-Gyan, Kolkata, pp. 1-78.

Seema, A. 2015. Medicinal properties of wild leafy vegetables available in Maharashtra state in rainy season. *International Journal of Recent Scientific Research* **6**(8):5875-5879.

Singh, L.R. 2016. Diversity of wild leafy vegetables in Santhal Pargana region of Jharkhand. *International Journal of Research in Plant Science* **6**(1):7-11.

Stephen, A., Suresh, R., Balaji, M., Sarathkumar, S., Parthiban, S. and Vinothraj, S. 2015. Diversity of vegetables from the markets of Chennai, Tamil Nadu, India. *Journal of Academia and Industrial Research* **3**(11):536-541.

Sur, P.R. 2008. *Bhesaja Udvid O Ter Gunagun*. Best Book Prakashan, Kolkata (India), pp. 224.

The Plant List 2013. Version 1.1. Published on the Internet; http://www.theplantlist.org (accessed 1st January, 2013).

Thongam, B., Konsam, S. and Handique, A.K. 2016. Assessment of wild leafy vegetables traditionally consumed by ethnic communities of Manipur, Northeast India. *Journal of Ethnobiology and Ethnomedicine* **12**:9.