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National Academy of Agricultural Science (NAAS)
Rating : 3.03

Estimation of pigment, protein and carbohydrate contents of some leafy vegetables in the Bongaigaon district of Assam, India with particular reference to *Blumia lanceoria* Linn., *Amorphophallus paeniifolius*(Dennst.)Nicolson and *Houttuynia cordata* Thunb.

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Abstract: *The wild edible plants with high diversity are widely distributed in the Western Ghats and in the north-eastern regions of India. Nutritional profile of many wild edible plants have found comparable and sometime better to many cultivated varieties (Prashanth Kumar and Shiddamallayya, 2014). As the state of Assam is with a very suitable climatic condition for agriculture and along with those cultivated products a lot of herbs grow as weeds having vast field of use by the local people. In this study it has been aimed to estimate quantitatively the pigment content such as Chlorophyll a, Chlorophyll b, Total Chlorophyll and the carotenoid and as well as the protein and carbohydrate content of* Blumia lanceoria *Linn.,* Amorphophallus paeniifolius*(Dennst.)Nicolson and* Houttuynia cordata *Thunb., leafy vegetables found to grow in the study area, i.e., the Bongaigaon area of the Bongaigaon district in Assam. This study reveals that out of the three samples taken* Blumia lanceoria *is richer in Chlorophyll a, Chlorophyll b, Total Chlorophyll and protein content.* Houttuynia cordata *is richer in Carotenoids content and* Amorphophallus paeniifolius *is richer in Total Carbohydrate content. The study undertaken is preliminary in its kind and hence this work can be helpful for further research works.*

Key words: *Leafy vegetable, Chlorophyll a, Chlorophyll b, Total Chlorophyll, protein, carbohydrate, Bongaigaon.*

INTRODUCTION

Any plant growing out of place is a weed. A plant of economic as well as medicinal importance may also become a weed if it found growing with other crops where it is not wanted (Islam, 1996). Usually the unwanted herbs growing in the kitchen gardens are removed as are considered as weeds. Though they are unwanted in a particular area but no one can deny the importance of such plants in some particular fields. Tribal people have the knowledge of the floristic wealth of their surroundings using various plants for their daily needs and using the forest resource in a sustainable manner (Sahu and Sahu, 2002).

Traditional knowledge can be termed as the knowledge which is practised generation after generation in a community. Some of the herbaceous plants are used as medicines, food and fodder etc. in different communities of people traditionally.

Traditional leafy vegetables are rich in proteins, vitamins A, B and C, as well as minerals like iron and calcium, making them an indispensable tool when it comes to reducing the prevalence of malnutrition, especially among resource-constrained rural and urban households (Smith *et al.* 2007, Nielsen *et al.* 1997). In addition, leafy vegetables are consumed by both low-income and high-income groups, making this dietary

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diversification approach to be ideal (Isubikalu *et al.*, 1999, Keding *et al.*, 2007). The other advantage of this intervention of promoting consumption of traditional vegetables is that, these leafy vegetables are present in most home gardens, can grow in marginal environments and sometimes as weeds.

The wild edible plants with high diversity are widely distributed in the Western Ghats and in the north-eastern regions of India. Nutritional profile of many wild edible plants have found comparable and sometime better to many cultivated varieties (Prashanth Kumar and Shiddamallayya, 2014).

This study deals with the quantitative estimation of pigment content, protein and carbohydrate of some of those wild edible leafy vegetables used traditionally among the communities of the study area.

AIM AND OBJECTIVE

As the state of Assam is with a very suitable climatic condition for agriculture and along with those cultivated products a lot of herbs grow as weeds having vast field of use by the local people. In this study it has been aimed to estimate quantitatively the pigment content such as Chlorophyll a, Chlorophyll b, Total Chlorophyll and the carotenoid and as well as the protein and carbohydrate content of some of the wild edible vegetables found to grow in the study area, i.e., the Bongaigaon area of the Bongaigaon district in Assam.

MATERIALS AND METHODOLOGY

There are three herbs used as vegetables by people of the dominating communities of the locality were collected after a field study work undertaken to document the name of the wildly available herbs used as vegetables. The samples were collected of *Blumia lanceoria* Linn., *Amorphophallus paeniifolius* (Dennst.) Nicolson and *Houttuynia cordata* Thunb. from the kitchen gardens of the people of the study area. No specific criteria for the selection of the sample for analysis were considered and three from the list of wild edible herbs documented were collected randomly. For the estimation of all the parameters spectrophotometric methods are followed. The instrument used is a UV visible dual beam spectrophotometer (evolution 201). For each estimation 10 readings were recorded and the mean value has been considered as the final result.

For the estimation of pigment contents 80% acetone was taken as solvent and Arnon's method was followed and absorbance values were taken in 480 nm, 645 nm and 663 nm for estimation of Chlorophyll a, Chlorophyll b, total Chlorophyll and carotenoids.

For the estimation of protein content of the samples, the most well known Folin-Lowry assay method of protein estimation was followed and absorbance recorded at 750nm. The estimated values were calculated for 1 g of samples.

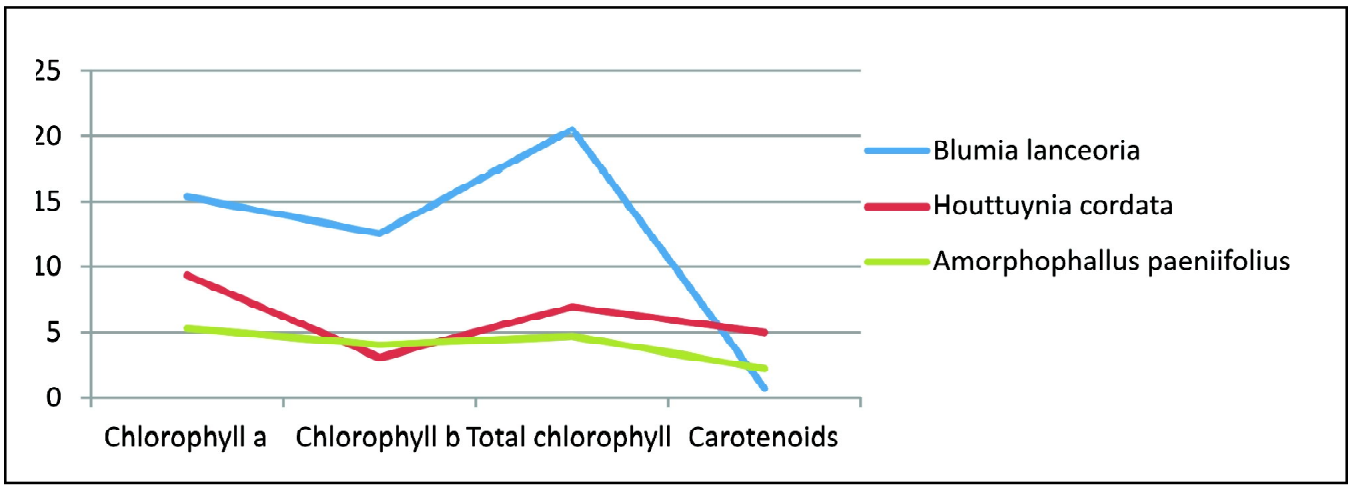
For the estimation of the total carbohydrate content of the samples Anthrone method was followed with readings of absorbance at 620nm and results were calculated for 1g of the sample.

RESULT AND DISCUSSION

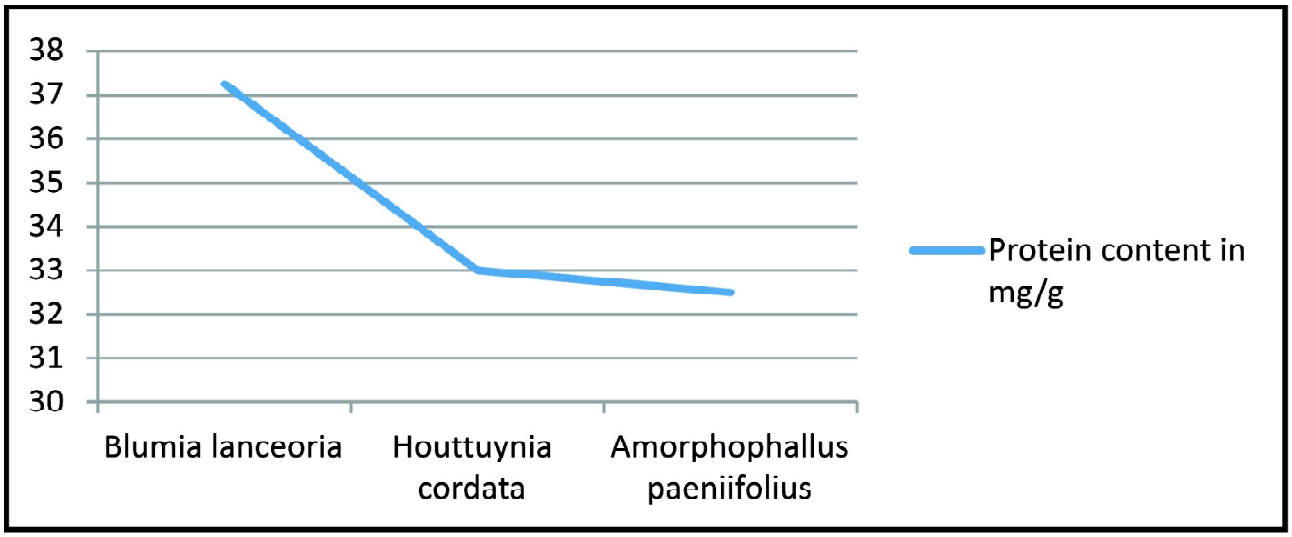
The water content of the three leafy vegetables was calculated simply by drying them and recording the fresh and dry weight and the observation is as follows:

Name of the Sample	*Fresh weight (in g)*	*Dry weight (in g)*	*Water content (in g)*
Blumia lanceoria	100	11.8	88.2
Houttuynia cordata	100	10.4	89.6
Amorphophallus paeniifolius	100	9.7	90.3

The graph 1 shows that value of Chlorophyll a is maximum in *Blumia lanceoria* with 15.38 mg/g while minimum in *Amorphophallus paeniifolius* with 5.29 mg/g. The chlorophyll b content is observed to be maximum in *Blumia lanceoria* with 12.57 mg/g and minimum in *Houttuynia cordata* with 3.08 mg/g. Total Chlorophyll content is found to be maximum in *Blumia lanceoria* with 20.53 mg/g while minimum in *Amorphophallus paeniifolius* with 4.70 mg/g. The carotenoids content of *Houttuynia cordata* is found to be maximum with 4.98 mg/g while minimum in *Blumia lanceoria* with 0.75 mg/g.

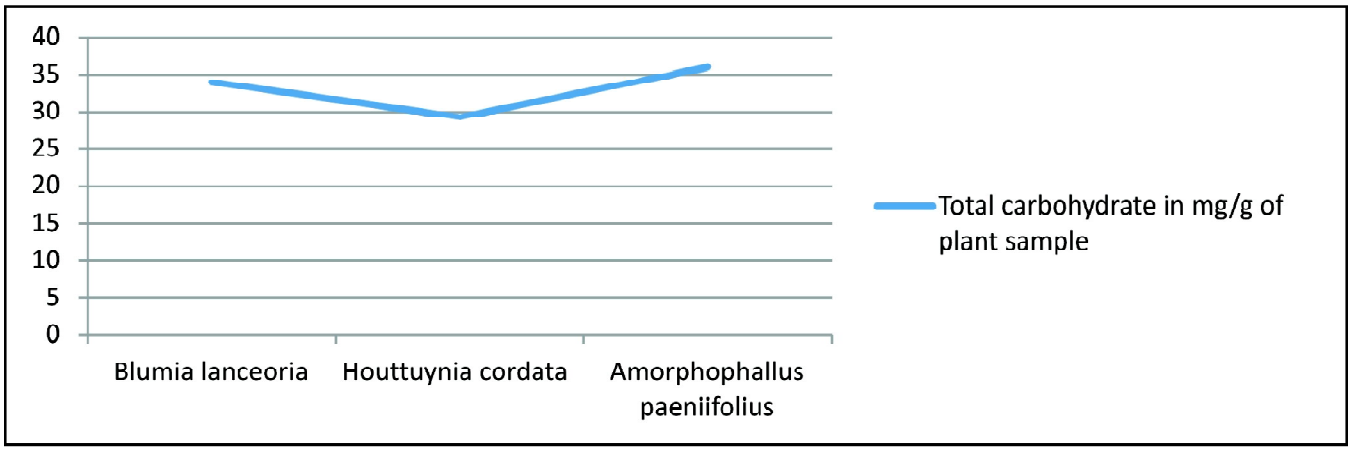


Graph 1: Pigment contents of the Samples



Graph 2: Total carbohydrate in mg/g of plant sample

Graph 2, reveals that the protein content of *Blumia lanceoria*, *Amorphophallus paeniifolius* and *Houttuynia cordata* are found to be 37.25 mg, 33 mg and 32.5mg per 1 g of the sample respectively.



Graph 3: Total carbohydrate in mg/g of plant sample

From the graph 3, the inference drawn is the samples *Blumia lanceoria*, *Amorphophallus paeniifolius* and *Houttuynia cordata* contain Total carbohydrate as 34 mg, 29.4 mg and 36 mg in 1 g of it respectively.

CONCLUSION

This study reveals that out of the three samples taken *Blumia lanceoria* is richer in Chlorophyll a, Chlorophyll b, Total Chlorophyll and protein content. *Houttuynia cordata* is richer in Carotenoids content and *Amorphophallus paeniifolius* is richer in Total Carbohydrate content.

The estimated values are higher of its kind and hence the specimens considered can be popularized as horticultural crop which may help create scope of economic development as well for the rural people.

The study undertaken is preliminary in its kind and hence this work can be helpful for further research works.

Acknowledgement

The authors are sincerely acknowledged to the Principal of Birjhora Mahavidyalaya, Bongaigaon, Assam for providing scopes and facilities for working in the Institutional Biotech Hub laboratory. Sincere thanks are also due to the Teachers of the Dept of Botany for their help and encouragement. Acknowledgement is due to colleagues Mrinmoy Deka, Debabrat Goswami and students Somnath and Kripabar for helping in collection of samples and other field works. Last but not the least is the people of the villages for offering every possible help during the field study unless which this work could not be preceded.

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