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1	Exploration and documentation of some wild vegetables used by local peoples of Sangrampur tehsil of Buldana district, Maharashtra (India)	Kishor B. Theng	Botany	Journal of emerging technologies & innovative research	2022	23495162
2	Preliminary phytochemical analysis of <i>Iphigenia indica</i>	Kishor B. Theng	Botany	Aayushi International Interdisciplinary research journal	2022	2349638x



Exploration and documentation of some wild vegetables used by local peoples of Sangrampur taluka of Buldhana district, Maharashtra (India).

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Abstract:

Present investigation concerns with exploration of wild vegetables information from local people of Sangrampur taluka of Buldhana district, Maharashtra. This study revealed that 32 wild vegetables belong to 24 different families consumed by tribal and other local people of this area. Mostly wild vegetables used as a source of food but also enlisted as medicinal plants. Genetically modified crops, hybrid varieties are commercially cultivated on large scale without maintaining quality of food which results in micronutrients deficiency problem. A wild vegetable provides food security as well as source of income for local people in different season.

Wild vegetables are rich in carbohydrates, vitamins, micronutrients, proteins, fibers that maintain health and boost immunity to protect against infection. Further research is necessary for determination of taxonomical, nutritional and phytochemical properties of wild vegetables for their safety used as alternative dietary source of human diet.

Key words: Wild vegetables, Tribal, Edible plants, Micronutrients, Sangrampur.

Introduction:

Wild plants species are mostly grown in wild habitats and commercially cultivated on very small scale. The different parts of these plants are consumed as a food by human beings. Rural peoples and especially tribal communities have a great knowledge about consumption and utilization of wild edible plants for various purposes. This knowledge has been transferred from one generation to another by traditional way (Jadhav *et al.*, 2015). Traditional knowledge is considered as basis for the utilization of wild edible plants (Shaheen *et al.*, 2017). Wild vegetables also act as an important source of food, medicine, nutrition and income for their sellers in market. These wild vegetables are safe for use and help to complete the nutritional demands, reduced healthcare problems of human.

Now a days, such a traditional health related knowledge rapidly goes on decline due to consequence of socio-economical and land use changes (FAO 2020; Bhogaonkar *et al.*, 2010). Present study explores traditional information of wild vegetables from local people and helps to fulfill the increasing food demand of future generation. India has second largest human population in the world of which 68.8% of population living in rural area (Census, 2011). Rural and tribal communities are dependent on wild edible plants for food during period of food crises and for adding food supplements (Rashid, 2008).

Previous studies of Diwakar and Sharma (2000) documented 567 species and Korpenwar (2010) reported 125 ethnomedicinal plants from Buldhana district. Present study deals exclusively with documentation of traditional information of wild vegetable utilized by local peoples of Sangrampur, Dist. Buldhana of Vidarbha region of Maharashtra. It helps to aware people about these wild vegetables for their nutritional and medicinal values which ultimately results in their increase consumption and market demands.

Materials and methods:

Field survey was conducted in the rural and tribal area, vegetable market area of Sangrampur taluka of Buldhana district of Maharashtra. Geographical location of Sangrampur is represented by coordinates as 21.03°N 76.68°E. The data was collected through discussion and common interviews with local, tribal peoples. The information was confirmed by repeated inquiries in different seasons.

The plants specimens were collected from remote places in vegetative and blooming conditions. The plants were brought to the laboratory and processed for herbarium specimens. Plants were identified with the help of relevant scientific literature (Diwakar and Sharma, 2000; Sharma *et al.*, 1996; Naik, 1998; Singh and Karthikeyan, 2000; Singh *et al.*, 2001). Subsequent visits were planned to photograph the plants in proper blooming period. Identified specimens were deposited in the herbarium of the Botany Department, Arts and Commerce College Warvat Bakal, Dist. Buldhana (M.S.).

Result and discussion:

Some wild vegetables are grown on uncultivated area by tribal peoples or collected from their wild habitat for consumption as a food. Utilization of some advance agriculture technique is essential for commercial production of wild edible plants. Conservation of gene resources of wild vegetables is also required for their future use (Kala, 2007).

The results reveal that 32 species of vegetables of 24 families were recorded from this study area, majority of them are herbs followed by climbers, shrub and trees. Most of the species belongs to Amaranthaceae and Fabaceae (3 species each) followed by Moraceae, Asteraceae and Portulacaceae (2 species each) while remaining families are with one species each (Table-1).

Various available literature were reviewed for collecting information about medicinal uses of these wild edible such as Ahirrao, *et al.* (2010), Patel *et al.* (2011), Reddy (2012), Kshirsagar *et al.* (2012), Arif, *et al.* (2016), Orni *et al.* (2018), Khan, *et al.* (2014), Gupta, *et al.* (2015), Waako, *et al.* (2005), Raut, *et al.* (2021) and Korpenwar (2012).

Table-1: Wild vegetables from Sangrampur area, Buldhana district of Maharashtra.

Sr. No.	Botanical Name	Local Name	Family	Part used	Medicinal Uses
1	<i>Abrus precatorius</i> L.	Gunj	Fabaceae	Leaves	Use to treat knee pain, stomachache, baldness.
2	<i>Aegle marmelos</i> L.	Bel	Rutaceae	Fruits	.Use to cure fever, diarrhea, dysentery as diuretic, anti- inflammatory.
3	<i>Amaranthus cruentus</i> L.	Rajgura	Amaranthaceae	Leaves, Seed.	Used as astringent, anti-inflammatory, anti-diabetic, to treat ulcers, to cure diarrhea.
4	<i>Amaranthus viridis</i> L.	Chopada math	Amaranthaceae	Leaves	Useful to treat internal bleeding, stomach disorders, inflammation, antiallergic.
5	<i>Argyreia nervosa</i> (Burm. f.) Bojer	Vidhara	Convolvulaceae	Leaves	Use to cure wounds, in skin diseases, to cure joint pain.
6	<i>Asparagus racemosus</i> Willd.	Shatawari	Liliaceae	Root	Effective in pain, anxiety, diarrhea and powerful tonic.
7	<i>Basella alba</i> L.	Mayalu	Basellaceae	Leaf	Useful as laxative, diuretic, to treat

					diarrhea, to reduce high blood pressure.
8	<i>Canavalia cathartica</i> Thouars	Abai	Fabaceae	Fruit	Use to treat cough, as anti-inflammatory.
9	<i>Capparis zeylanic</i> L.	Waghati	capparaceae	Fruit	Effective as antidiabetic, sedative, antiallergic, stomach disorders.
10	<i>Carissa carandas</i> L.	Karvand	Apocynaceae	Fruit	Use in stomach pain, constipation, to treat wound, anorexia.
11	<i>Celosia argentea</i> L.	Kurdu	Amaranthaceae	Leaves	Use to cure kidney stone, antidote on snake poison, in diarrhea.
12	<i>Centella asiatica</i> L.	Brahmi	Apiaceae	Leaves	Use as antimicrobial, anti-inflammatory, anoxidant agent.
13	<i>Citrus colocynthis</i> (L.) Schrad.	Indrayan	Cucurbitaceae	Fruit	Use as hair tonic, antidiabetic, joint pain, toothache.
14	<i>Commelina benghalensis</i> L.	Kena	Commelinaceae	Leaves	Effective for piles, leprosy, indigestion, constipation.
15	<i>Colocasia esculenta</i> L.	Alu	Araceae	Leaves, Petiole	Use to treat haemorrhage, cough, as antimicrobial, anti-inflammatory agent.
16	<i>Dendrocalamus strictus</i> Roxb.	Bambu	Poaceae	Young shoots	Used as tonic, in tuberculosis.
17	<i>Enicostema axillare</i> (poir. ex lam) A. Raynal	Nay-bhaji	Gentianaceae	Leaves	Useful for liver disorder, indigestion, swelling, snake bite.
18	<i>Ficus racemosa</i> L.	Umber	Moraceae	Fruit	Effective in respiratory disease, liver disorders, diabetes.
19	<i>Ficus religiosa</i> L.	Pimpal	Moraceae	Leaves	Effective for diarrhea, Cough, joint swelling and pain.
20	<i>Glossocardia bosvallia</i> (L.f.) DC.	Khadak shepu	Asteraceae	Whole plant	Use in wound healing, to cure blood vessels.
21	<i>Hibiscus sabdariffa</i> L.	Ambadi	Malvaceae	Leaves	Effective for hypertension, antibacterial, antioxidant agent.
22	<i>Launaea procumbens</i> (Roxb.)	Pathari/jangali gobi	Asteraceae	Leaves	Use in kidney, liver disorders, antifungal, diuretic.
23	<i>Momordica dioica</i> Roxb.	kanturle	Cucurbitaceae	Fruits	Used to treat fever, jaundice and hypertension.
24	<i>Moringa oleifera</i> Gaertn.	Shevga	Moringaceae	Fruit, flower	Effective for asthma, diarrhea, intestinal problems kidney stone.
25	<i>Muccuna pruriens</i> Hook.	Kuyari	Fabaceae	Pods	Used as aphrodisiac, antioxidant and nervous disorders.
26	<i>Phyllanthus amarus</i> Schum. & Thonn	Bhuiawala	Phyllanthaceae	Leaves	Used as diuretic, antiseptic, to relief in liver and kidney pain.
27	<i>Portulaca quadrifida</i> L.	Ranghol	Portulacaceae	Whole plant	Effective in asthma, cough, urinary disorders.
28	<i>Portulaca oleracea</i> L.	Ghol bhaji	Portulacaceae	Whole plant	Used as sedative, analgesic, as a tonic, in dysentery.
29	<i>Tamarindus indica</i> L.	Chinch	Caesalpinaceae	Fruits, Flower, Leaves	Effective in jaundice, inflammation, wound healing, antifungal agent.
30	<i>Tinospora</i>	Gulvel	Menispermaceae	Leaves	Used in diabetes, hepatitis, stomach

	<i>cordifolia</i> Willd.				problem, high cholesterol.
31	<i>Tribulus terrestris</i> L.	Gokharu	Zygophyllaceae	Leaves, Fruit.	Used as aphrodisiac, anti-inflammatory, diuretic, urinary disorder, diabetes.
32	<i>Telosma pallida</i> Roxb.	Zatuli	Asclepiadiaceae	Flower	Effective as antifungal, antiasthmatics, use to treat digestion problems.

Conclusion:

This study helps in the popularization of wild vegetable status and encourages peoples to use traditional vegetables as a source of food, nutrition and medicine which ultimately results in their increase consumption and market demands. There is need of unless efforts for the conservation of wild vegetables by educating younger about their importance in food. Further study required for evaluation of taxonomical, nutraceutical and phytochemical properties of wild vegetables for their safety used as alternative dietary source of human diet in future.

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Preliminary phytochemical analysis of *Iphigenia indica*

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Abstract:

Present study was carried out to determine the presence of various phytochemical compounds from *Iphigenia indica* corm. Ethnomedicinal information was obtained from tribal people as well as traditional healers and confirmed the use of plant for various purposes such as, corm used as food, eaten as raw, to get relief from colic and headache. Phytochemical analysis was performed by using a series of solvents such as petroleum ether, chloroform, ethanol and acetic acid by soxhlet extractor. Qualitative phytochemical analysis confirmed the presence of alkaloids, carbohydrates, glycosides, saponins, proteins, phytosteroids and terpenoids, flavonoids, fixed oil and fats, etc. Presence of various phytochemicals strongly support the medicinal properties of this plants. Hence further investigation is required for isolation, characterization and structural determination of new natural bioactive compounds from this medicinal crude drugs.

Key words: Qualitative phytochemical, *Iphigenia indica*, Ethnomedicinal, soxhlet extractor, crude drugs.

Introduction:

Human beings have been dependent on plants for medicine to complete their health care needs from the beginning of civilization ⁽¹⁾. Medicinal plants naturally contain certain chemical constituents having therapeutic properties ⁽²⁾. Traditional and folklore medicines have a significantly participates in health care practices around the world. Ethnic medicines are highly suitable and comparatively having very less side effects ⁽³⁾. Phytochemical constituents derived from plants are advantageous as such data become valuable for the production of different complex chemical substances ⁽⁴⁾.

Iphigenia indica (L.) belongs to Liliaceae family is mostly occurs on hillside among grassland area. Flowering and fruiting mostly occurs during july to september months. It is an erect herb, which grows up to 10-18 cm tall in height. Its corms are mostly ovoid, subglobose or tunicated shape with presence of brownish sheaths. Leaves are alternately arranged, sessile or subsessile, having linear or linear- lanceolate shape with coriaceous or subcoriaceous texture. Flowers are brown, purple or pale purple in color, axillary and extra-axillary in position on terminal zigzag stems. Fruit is capsule type with elliptic-oblong shape along with presence of groove. Seeds are many, brown in color and globose or subglobose.

Peoples of some tribal communities located in Buldana district use corm of this plant as food and eaten as raw. They also used it to get relief from colic and headache. Hence present investigation was focused on preliminary phytochemical analysis of *Iphigenia indica*.

Materials and Methods:

Collection of plant material:

Plant material of *Iphigenia indica* was collected from rural area of Buldana district, Maharashtra, India. Plant was identified by using various floras ^(5,6) and also from the experts of region. Plant material was brought to the laboratory, thoroughly washed with water to remove foreign matter, shade dried and then grind into fine powdered by using mechanical grinder.

Extraction of plant material:

Grinded fine powder of *Iphigenia indica* corm was subjected to solvent extraction by using series of different solvents such as petroleum ether, chloroform, ethanol and acetic acid by soxhlet apparatus. Each time before extracting with next solvent, the powder residue was dried properly. Extract obtained in each solvent was concentrated, solidified, determined yield percentage and used for preliminary phytochemical analysis.

Phytochemical evaluation:

For preliminary phytochemical analysis, each extract of corm was subjected to various qualitative test and determine the presence of different phtoconstituents.

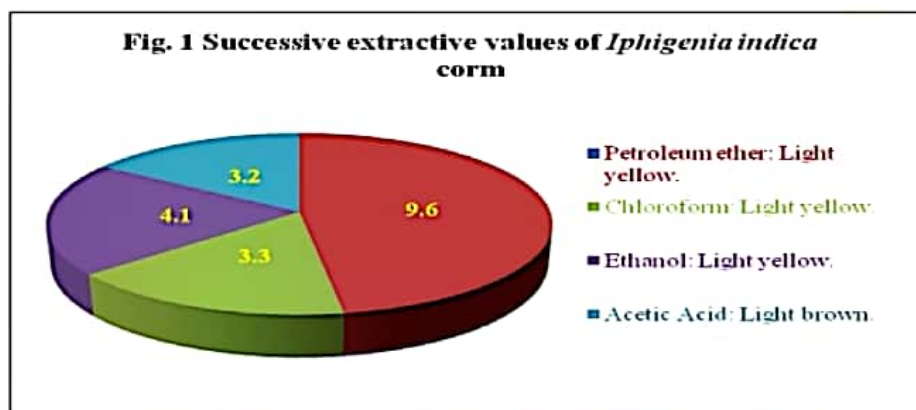
Preliminary phytochemical analysis was carried out of all the extracts as per the standard methods of Brain and Turner, (1975); Harborne, (1994); Trease and Evans, (1996); Khandelwal, (2006) and Kokate *et al*, (2010).

Results and Discussion:

Crude extract of medicinal plants is biologically more active than isolated compounds due to their synergistic effects. Hence phytochemical analysis is very useful in identifying new sources of important compounds like alkaloids, flavonoids, phenolic compounds, saponins, steroids, tannins, terpenoids, amino acid, etc. During phytochemical analysis, yield percentage of successive solvent extracts of *Iphigenia indica* corm were found as; petroleum ether extracts: 9.6%, chloroform extract: 3.3%, ethanol extract: 4.1% and acetic acid extract: 3.2% (as shown in table 1. and fig.1).

Table 1: Successive solvent extracts of *Iphigenia indica* corm

Sr. No.	Solvent extract	Color	Yield percentage
1	Petroleum ether	Light yellow	9.6%
2	Chloroform	Light yellow	3.3%
3	Ethanol	Light yellow	4.1%
4	Acetic Acid	Light brown	3.2%



Preliminary phytochemical analysis of *Iphigenia indica* corm was carried out in petroleum ether, chloroform, ethanol and acetic acid extracts. Phytochemical screening was revealed the presence of alkaloids, carbohydrates, glycosides, saponins, proteins, phytosteroids and terpenoids, flavonoids, fixed oil and fats, etc. as shown in table 2.

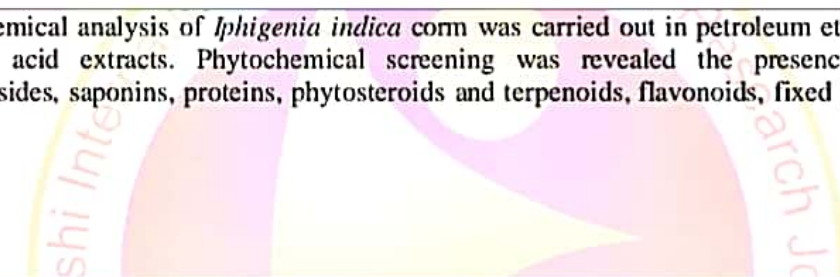


Table 2: Phytochemical analysis of *Iphigenia indica* corm extracts

Sr. No.	Test For Phytochemical	Test	Pet. ether extract	Chloroform extract	Ethanol extract	Acetic acid extract
I	Alkaloids					
1		Dragandorffs Test	+	+	+	+
2		Hager's Test	+	+	+	+
3		Mayer's Test	+	-	+	-
4		Wagner's Test	+	+	+	+
II	Carbohydrates					
1		Fehling's Test	+	+	-	-
2		Molisch's Test	-	+	+	+
3		Benedicts Test	+	-	+	-
III	Glycosides					
1		Borntrager's Test	+	+	+	-
2		Legal's Test	-	+	+	-
IV	Saponin					
1		Foam Test	+	+	+	+
V	Tannin and Phenolic compound					
1		5% Ferric chloride Test	-	-	-	-
VI	Proteins					
1		Millon's Test	-	-	+	+
2		Biuret's Test	-	-	-	-
VII	Amino Acid					

1		Ninhydrin Test	-	-	-	-
VIII	Phytosteroids and Terpenoids					
1		Lieberman-Burchards Test	-	+	-	-
2		Salkowski Test	+	+	+	+
IX	Flavonoids					
1		Alkaline reagent test	-	+	+	+
X	Gums and Mucilage					
1		Alcohol test	-	-	-	-
XI	Fixed oil and fats					
1		Stain test	-	-	+	-

Conclusion:

Presence of various phytochemicals strongly support the medicinal properties of this plants. Hence further investigation is required for isolation, characterization and structural determination of new natural bioactive compounds from this medicinal crude drugs.

Where, + = present, - = absent.

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