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PROXIMATE AND NUTRITIONAL ANALYSIS OF WILD VEGETABLES FROM PALGHAR DISTRICT , MAHARASHTRA, INDIA

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ABSTRACT :

Ten wild vegetables viz. plants species of Chlorophytum tuberosum Roxb., Celosia argentea Linn, Amorphophllus commutatus (Schott) Engl.in DC., Bauhinia Malbarica Roxb., Peucedanum grande, Arum sessiliflorum Roxb.Ipomea aquatic Of Vegetable and three fruits vegetables namely Garugo pinnataRoxb.Randia uliginosa (Retz.) DC and Momordica dioica Roxb used as fruits vegetables Were studied for nutritional assessment and proximate analysis. Moisture, Fibers, Ash, Dry matter,Total protein, fat and carbohydrate contents were reported as the percentage composition, Starch, energy and sugar were calculated from all the plants species which is used by tribal of Palghar. Result shows that in Peucedanum grande of vegetable and Gaurgo pinnata Roxb. Of fruits contain highest amount of Carbohydrates and respectively Bauhinia malbarica and Randia uliginosa fruit contain lower amount of Carbohydrates. Bauhinia malbarica contain highest in fat and Arum sessiliflurus were calculated lower fats. Garugo pinnata were reach source of starch and Ipomea aquatic were less source of starch. These vegetables were proved to be high level of proximate content and therefore may be considered as a good source of tribal food.

KEYWORDS : *wild vegetable, proximate analysis, Tribal, Crude protein,fat.*

INTRODUCTION

The palghar region of Maharashtra is highly enriched with edible wild vegetables. Such vegetable with high potential and medicinal value. Wild vegetables play a crucial role in the life of tribal people of developing countries [(1)].Tribal in many developing countries depends on wild edible plants to fulfill their food need basically in food crisis [(2)]. These vegetables are eaten by local tribals to play a significant role in nutrition and also provide income for poor communities [(3)]. Leafy vegetables are considered as primary food and ingredient in diet of tribals of palghar district. They are especially helpful to such people where supply of food or market is not available [(4)]. The most important nutrients present in plants are Carbohydrates, Starch, Free Sugar, Oils, Proteins,Minerals, Ascorbic acid and the antioxidant phenols, such as chlorogenic acid and its polymers[(5)].Green leafy vegetable have long been recognized as most abundant source of protein,vitamin, carbohydrates and high energy source [(6)].

MATERIALS AND METHODS-

Sample preparation

Studied 30 leafy vegetable plants from palghar district, out of these selected 10 plants include leaf, green stem an fruits were collected from different area of Palghar district in different season. The

sample collected for nutritional analysis are *Chlorophytum tuberosum* Roxb., *Celosia argentea* Linn, *Amorphophllus commutatus* (Schott)Engl.in DC., *Bauhinia Malbarica* Roxb., *Peucedanum grande, Arum sessiliflorum* Roxb. Of Vegetable and three fruits vegetables namely *Garugo pinnata* Roxb.*Randia uliginosa* (Retz.)DC and *Momordica dioica Roxb.* Each sample about one gram of fresh leaf or fruit parts sample was taken washed thoroughly with water for analysis.

CHEMICAL ANALYSIS-

Dry matter and moisture content of the wild vegetable were determined by keeping the sample in oven for overnight at 105^{0}C for a constant weight and expressed in percentage. Crude protein content of the fresh leaf sampleswere determined byLowery et al., (1951) method, for crude fiber Sadassivam and Manikam (1992) [7] method was applied.

Determination of Ash: This was determining using thestandard method of Association of official analytical chemist.

Determination of Fat – The fat from the sample was extracted by Sadasivam and Manikam (1992) [7], Percentage of fat was calculated by using the following formula.

$$\text{Crude fat content \%} = \frac{(b-a)}{weight\ of\ sample} \text{x } 100$$

Carbohydrates were estimated by Anthron method (Nelson, 1944) using 80% alcohol and Buchner's funnel.

Energy contents were calculated as describe by Eleanor Noss, whitney and Sharon RadyRolfes [8].

Statistical calculation –

Three determinations were carried out for each analysis. The mean value and standard deviation were calculated using statistical software.

Results-

Plant species selected for nutritional evaluation are listed with Botanical name, Local Marathi Name and estimated value of various nutritional compound observed in 10 different leafy vegetable and vegetable fruits.

Moisture content- From the experiment result, it is observed that among the fresh leafy vegetable sample and vegetable fruits registered much moisture with a maximum of 93.75% in *Celosia argentea* Linn.and minimum of 73.5% in *Momordica dioica, The moisture content analyzed showed that Ipomea aquatic* Fork 90.12%, *Arum sessiliflurus 89.46%,Amorphopallus commutatus* Engler 89.45%, *Bauhinia mulbarica* Roxb.87.00, *Chlorophytum tuberosum*87.86*Peucedaum grande 79.93%, Garugo Pinnata* Roxb.77.05%, *Randia uliginosa 74.00%*

Crude protein – All the selected plants shows good amount of protein ranges from0.06 to1.07 %. *Amorphopallus commutatus* Engler showing highest protein i.e. 1.07% and lowest shown in 0.06% in *Bauhinia mulbarica* Roxb where as *Randia uliginosa 0.15 %,Momordica dioica 0.29% Celosia argentea* Linn 0.20, *Ipomea aquatic* Fork.0.16% observed to have moderate protein content.

Fat- Among the leafy vegetable studied *Randia uliginosa* showed the highest fat content 9.70%, While *Arum sessiliflurus exhibited*the lowest fat content 0.20%, *Momordica dioica 7.40% Garugo Pinnata* Roxb.7.45%, *Bauhinia mulbarica* Roxb.5.20% *Ipomea aquatic* Fork.5.10%, *Chlorophytum tuberosum .5%, Celosia argentea* Linn 2.45 and *Peucedaum grande* 1.55%, reported to be contained low fat value in comparison to the other selected leafy vegetable.

Carbohydrates- All vegetables showed good amount of carbohydrates with *Garugo Pinnata* Roxb 61.5% having the highest value and *Bauhinia mulbarica* Roxb 11.5% the lowest carbohydrates content. Whereas *Peucedaum grande 60.4%, Arum sessiliflurus 57.5%, Momordica dioica 46.8%, Ipomea aquatic* Fork.34.5% ,*Chlorophytum tuberosum 34.0%, Randia uliginosa 29%, Amorphopallus commutatus* Engler 19.45% and *Celosia argentea* Linn 18.50.

Energy- The overall calculated energy values of the analyzed vegetables were *Garugo Pinnata* Roxbwas having the highest energy value (314.57 kcal / 100 g) The caloric value was high compared to *Momordica dioica* 254.96 K.cal, *Peucedaum grande* 258.95 K.cal., *Arum sessiliflurus* 233.0 K.cal., *Randia uliginosa* 203.9 K.cal., *Chlorophytum tuberosum* 171.1 K.cal., *Celosia argentea* Linn 96.85and the lowest amount of energy in Bauhinia *mulbarica* Roxb 93.04 K.cal.,

DISCUSSION-

Selected leafy vegetable have high percentage of moisture content. *Celosia argentea* Linn showed the highest moisture content. wild vegetables supply required amount of moisture to the humans as water is the most important nutrient and the most abundant substance in the human body[9] .Disease of modern world like diabetes and blood pressure were rare among aged local people who are still depend on local ethnic life cycle[10].

Moisture in vegetables is a good source of water and is necessary as it is considered that around 20% of the total water consumption must come from food moisture [11],the moisture content was comparable to other wild edible plants such as *Allium cepa, Brassica oleraceae, Spinaciaoleraceae andCoriandrum sativum with* 87.55, 88.48, 90.21 and 83.58 % respectively [9].

All the selected wild leafy vegetable reported good amount of protein, the daily requirement of protein in children,adults, pregnant and lactating mother are 34-36, 13-19 and 17-71 g respectively [12]. However , leaf of *Amorphopallus commutatus* Engler contain highest protein which indicate that the vegetable can be used for repairing of body tissue and for building of body , also useful for formation of enzyme and hormones. Protein also aid in the formation of antibody that enable the body to fight infection. The local wild plant species consumed as leafy vegetable contain significant higher amount protein than the common cultivated leafy vegetable [11]. Vegetable of the studied species contain good amount of carbohydrates *Peucedaum grande 60.4%, Arum sessiliflurus 57.5%, Momordica dioica 46.8%, Ipomea aquatic* Fork.34.5% ,*Chlorophytum tuberosum 34.0%,* Which is 24.18 , 28.74 and 41.18 in *Ficus palmate*, *Nitraria retusa* and *Arbutus pavarii* respectively. [13], the above carbohydrates contents studied vegetable comparatively with most Nigerian leafy vegetables[14].

CONCLUSION-

Tribal communities of Palghar district has rich knowledge of edible plants. Possess nutrients comparable with other common leafy vegetable and hence have the potential to fulfill the nutritional requirement of local tribals.

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Fig .1 Total Carbohydrates (%) content present in wild vegetable.

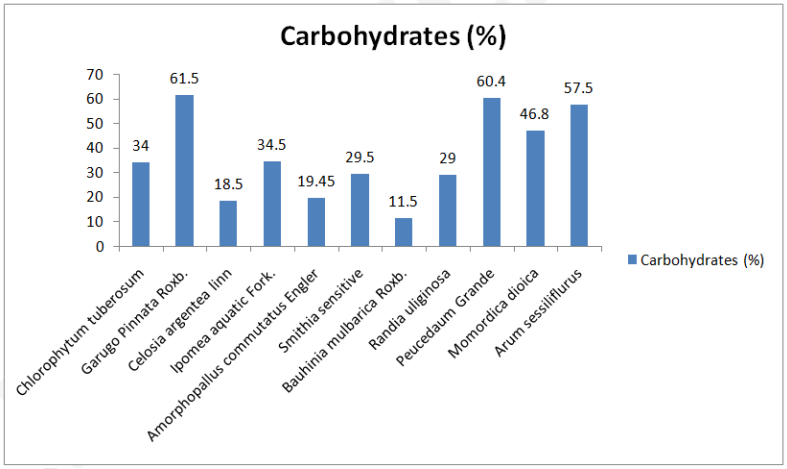

Fig .2 Total Protein (%) content Preset in wild vegetable.

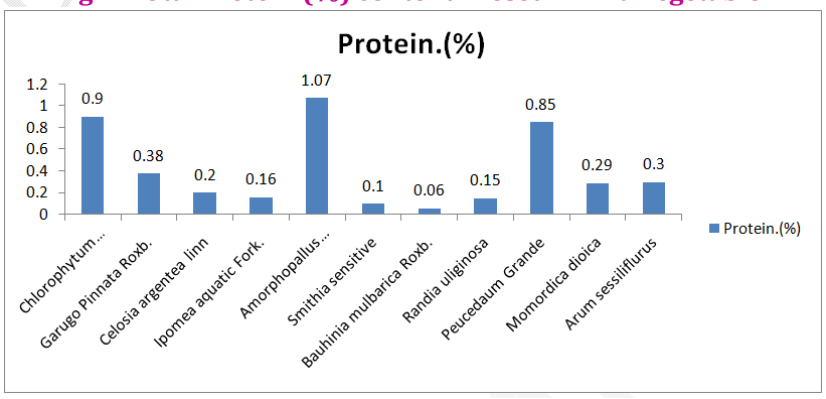

Fig .3 Total Fibers (%) content Present in wild vegetable.

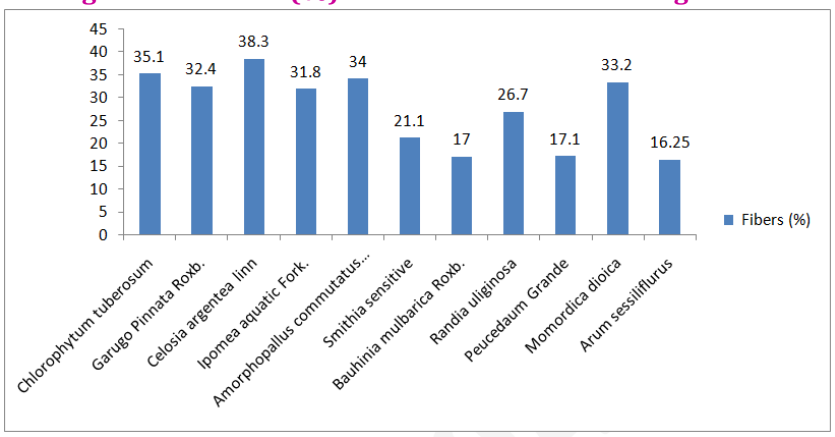

Fig .4 Total Fats (%) content Present in wild vegetable.

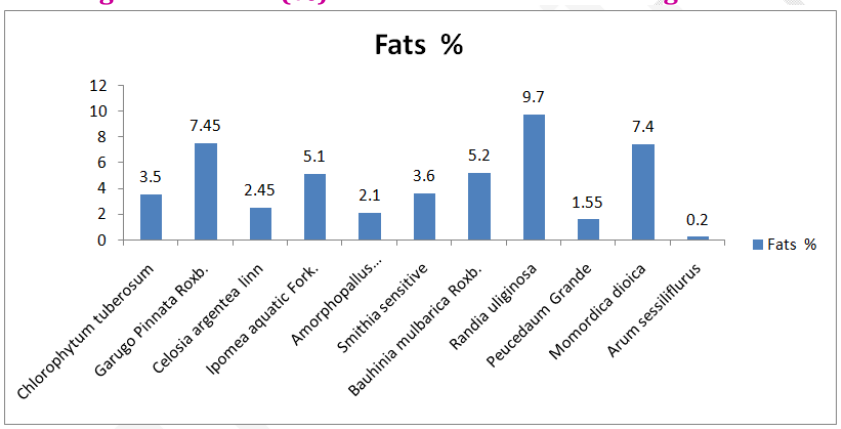

Fig .5 Total Dry Matter (%) content Present in wild vegetable.

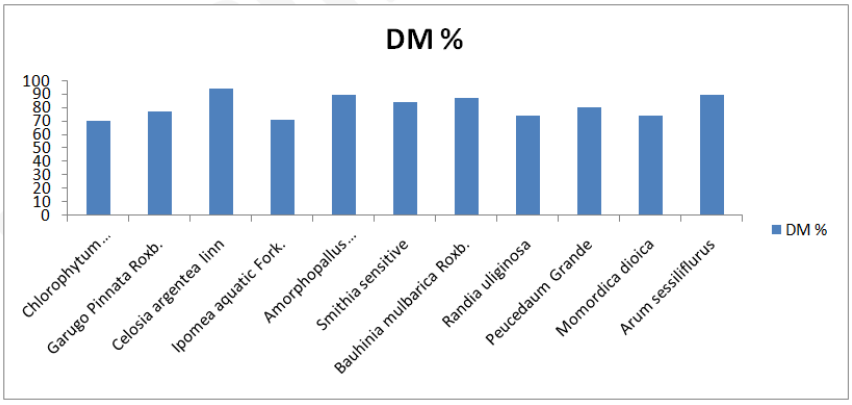

Fig .6 Total Ash (%) content Present in wild vegetable.

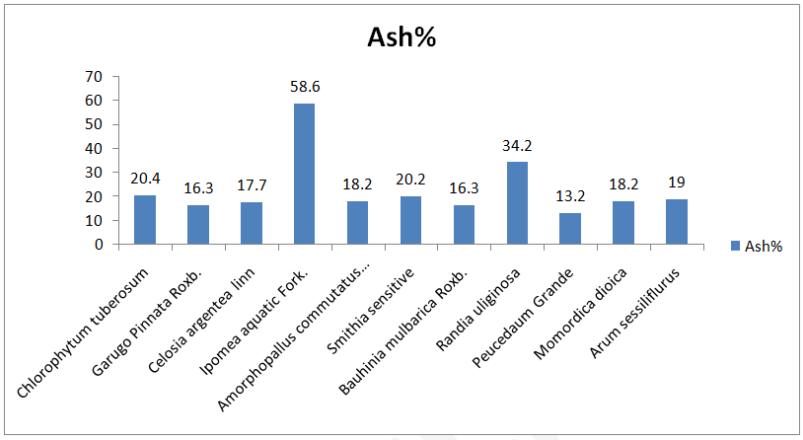

Fig .7 Total Moisture (%) content Preset in wild vegetable.

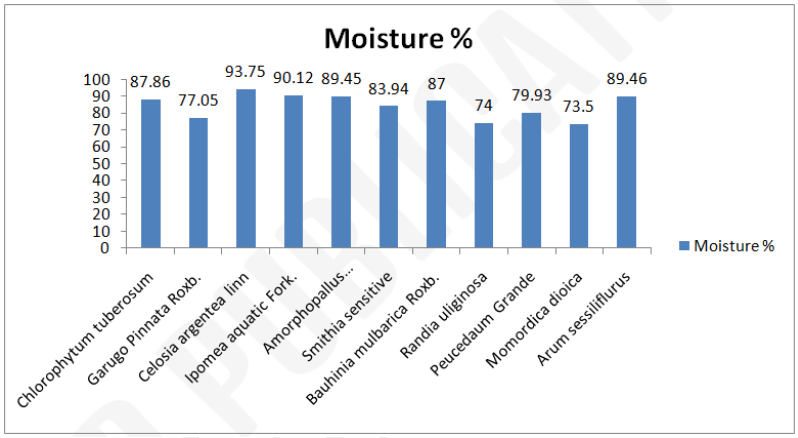

Fig.8 Total Energy (K.Cal) content in wild edible vegetabls.

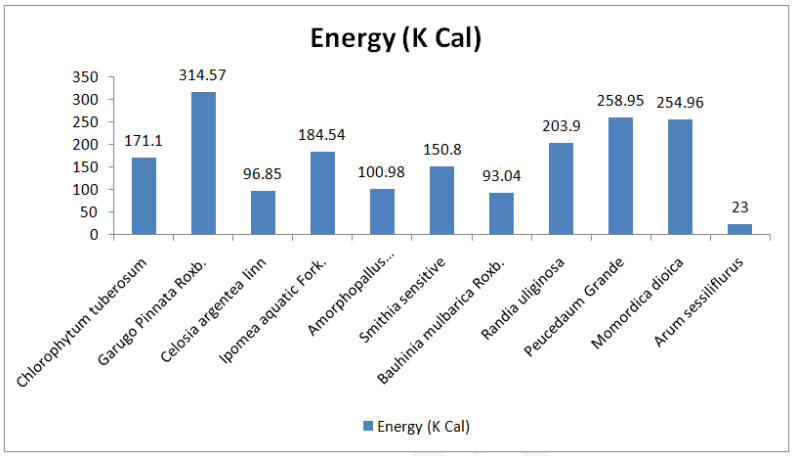

Table 1.
Nutritional composition of local wild vegetables and fruits from palghar district (per 100g of edible partof dry materials).

Sr. No	Plants Name	Local Name	Energy (k cals)	Moisture %	Ash%	DM %	Fats %	Fibers (%)	Protein.(%)	Carbohydrates (%)
1	*Chlorophytum tuberosum*	Koli	171.1	87.86	20.4	70.0	3.5	35.1	0.90	34.0
2	*Garugo Pinnata* Roxb.	Kakad	314.57	77.05	16.3	77.05	7.45	32.4	0.38	61.5
3	*Celosia argentea* Linn	Kardu	96.85	93.75	17.7	93.75	2.45	38.3	0.20	18.50
4	*Ipomea aquatic* Fork.	Nalabhaji	184.54	90.12	58.6	70.7	5.10	31.8	0.16	34.5
5	*Amorphopallus commutatus* Engler	Shevli	100.98	89.45	18.2	89.45	2.10	34.0	1.07	19.45
6	*Bauhinia mulbarica* Roxb.	Koyrel.	93.04	87.00	16.3	87.00	5.20	17.0	0.06	11.5
7	*Randia uliginosa*	Pendharu.	203.9	74.00	34.2	74.00	9.70	26.7	0.15	29.0
8	*Peucedaum grande*	Bhapali	258.95	79.93	13.2	79.93	1.55	17.1	0.85	60.4
9	*Momordica dioica*	Kartoli	254.96	73.5	18.2	73.5	7.40	33.2	0.29	46.8
10	*Arum sessiliflurus*	Lott	233.0	89.46	19.0	89.46	0.20	16.25	0.30	57.5

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