Utilization of underutilized vegetables crops

e ISSN-2321-7987 |

RASHTRIYA KRISHI Volume 11 Issue 2 December, 2016 15-17

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Utilization of underutilized vegetables crops as a source of potential health benefit compounds

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With over half of humanity's calorific and protein need



being met by only three crops maize, wheat and rice. Thus food basket has reached in a highly vulnerable situation and an urgent action to promote crop diversification is needed. Underutilized vegetable cops are rich source of vitamins such as beta carotene, ascorbic acid, folic acid and riboflavin as well as minerals such as iron, calcium and phosphorus. They also contain an immense variety of bioactive non-

nutritive health promoting compounds such as antioxidants and phytochemicals, which provide health benefits beyond

basic nutrition. Underutilized vegetable crops not only supply the protective nutrients and add variety to a monotonous diet, but also have an alternative taste, attractive colour, pleasing appearance and aroma. Some leafy vegetables especially, amaranth, fenugreek, palak and spinach has attained commercial status and its cultivation is wide spread in India. Because of their low production cost and high yield, Underutilized vegetable crops especially leafy vegetables are considered to be one of the cheapest vegetables in the market and it could be rightly described as 'poor man's vegetables'.

Chemical analysis of underutilized vegetables: Drumstick is known for its medicinal properties since time immemorial and its leaves are used by physicians of traditional medicine for the hypertension. Coleonol, a diterpenoid from *coleus forskohlii* become a good



Table 1: Medical property of underutilized vegetable crops				
Vegetables	Family	Activity		
Allium cepa L.	Alliaceae	Anticoagulant, Bronchodilatory		
Allium sativum L.	Alliaceae	Adaptogenic		
Boerhaavia diffusa L.	Nyctaginaceae	IUCD		
Capsicum spp.	Solanaceae	Hypolipidaemic		
Coleus forskohii	Labiatae	CNS depressant, Hypotensive		
Costus speciosus	Costaceae	Hypotensive		
Gymnema sylvestre	Asclepiadaceae	Hypoglycaemic		
Mollugo cerviana	Molluginaceae	Cardiostimulant		
Momordica charantia L.	Cucurbitaceae	Hypoglycaemic, Hypolipidaemic		
Solanum melongena L.	Solanaceae	Analgesic, CNS depressant		
Trianthema portulacastrum L.	Aizoaceae	Analgesic, Antipyretic		

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antihypertensive agent. The anti-perkinsonian and prolactin reducing effect of legume vegetable, *Mucumapruriens* have been reported. Eating leaves of *Polygonumplebeium as* vegetable stability of vegetable leaves. As a C4-cycle plant, amaranth can sustain high photosynthetic activity and water use efficiency under high temperatures and high radiation intensity, making it an ideal crop for

abiotic stress



improves lactation. Among green leafy vegetables, namely Fenugreek (Trigonella foenumgraecum L.), amaranth (Amaranthus tricolor L.), spinach beet or palak (Beta vulgaris var. bengalensis), spinach (Spinacia oleracea), chenopod or bathua (Chenopodium album L.), sarson sag (Brassica juncea var. rapa), lettuce (Lactuca sativa), Swiss chard (Beta vulgaris spp. cicla) and Indian spinach or poi (Basella spp.) were utilized to determine their biochemical composition. On overall basis the antioxidant capacity of leafy vegetables were in order of amaranth > chenopod > spinach >palak> fenugreek >sarson sag. Water spinach proved to be heat

tolerant and amaranth moderately heat tolerant, while the majority of vegetable crops were either heat sensitive or only slightly heat tolerant as indicated by the membrane





conditions under changing climates. Amaranth is a very nutritious leafy vegetable, both in raw and cooked form. The nutritional value of this crop is comparable to spinach, but much higher than cabbage and Chinese cabbage. The root bark of drumstick has a pungent taste similar to horseradish (Armoracia rusticana) and is used as a condiment. Dried leaf powder is a good option to supplement diets of children and pregnant and lactating women. Moringa powder has been recommended as an immune stimulant in HIV/AIDS treatment. Mungbean is a good source of dietary protein with high contents of folate and iron compared with many other legume crops. As it is a short duration legume, it fits well into the fallow

period between rice-rice, rice-wheat, rice-potato-wheat, maize-wheat, cotton, and other cash crop cropping systems in use across the Indo-Gangetic plain.

Table 2 : List of underutilized vegetable crops		
Sr. No.	Common name	Scientific name
1.	New Zealand spinach	Tetragonia tetragoniodes L.
2.	Amaranth	Amaranthus tricolor L.
3.	Lagos spinach	Celosia argentea L.
4.	Leek	Allium ampeloprasum L. var. porrum
5.	Shallot	Allium cepa (Aggregatum group)
6.	Welsh onion, Japanese onion	Allium fistulosum
7.	Chive	Allium schoenprasum
8.	Basella	Basella alba L.
9.	Orach	Atriplex hortensis
10.	Bathua	Chenopodium album L.
11.	Beet	Beta vulgaris L.
12.	Swiss Chard	Beta vulgaris var. cicla
13.	Kale	Brassica oleracea var. acephala
14.	Brussels sprout	Brassica oleracea var. gemmifera
15.	Broccoli	Brassica oleracea var.Italica
16.	Rutabaga/Swede	Brassica napus var. napobrassica
17.	Pit sai Chinese cabbage	Brassica pikinensis

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Table 2 contd...

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UTILIZATION OF UNDERUTILIZED VEGETABLES CROPS AS A SOURCE OF POTENTIAL HEALTH BENEFIT COMPOUNDS

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42.CorianderCoriandrum sativum43.CeleryApium graveolens L.44.ChervilAnthriscus cerefolium45.ParsnipPastinaca sativa L.46.FennelFoeniculum vulgare var. dulce47.TurmericCurcuma longa48.GingerZingiber officinale49.KakrolMomordica dioica L.50.Broccoli raabBrassica rapa (Ruvo group)	40.	Parsley	Petroselinum crispum
43.CeleryApium graveolens L.44.ChervilAnthriscus cerefolium45.ParsnipPastinaca sativa L.46.FennelFoeniculum vulgare var. dulce47.TurmericCurcuma longa48.GingerZingiber officinale49.KakrolMomordica dioica L.50.Broccoli raabBrassica rapa (Ruvo group)	41.	Dill	Foeniculum vulgare
44.ChervilAnthriscus cerefolium45.ParsnipPastinaca sativa L.46.FennelFoeniculum vulgare var. dulce47.TurmericCurcuma longa48.GingerZingiber officinale49.KakrolMomordica dioica L.50.Broccoli raabBrassica rapa (Ruvo group)	42.	Coriander	Coriandrum sativum
45.ParsnipPastinaca sativa L.46.FennelFoeniculum vulgare var. dulce47.TurmericCurcuma longa48.GingerZingiber officinale49.KakrolMomordica dioica L.50.Broccoli raabBrassica rapa (Ruvo group)	43.	Celery	Apium graveolens L.
46.FennelFoeniculum vulgare var. dulce47.TurmericCurcuma longa48.GingerZingiber officinale49.KakrolMomordica dioica L.50.Broccoli raabBrassica rapa (Ruvo group)	44.	Chervil	Anthriscus cerefolium
47.TurmericCurcuma longa48.GingerZingiber officinale49.KakrolMomordica dioica L.50.Broccoli raabBrassica rapa (Ruvo group)	45.	Parsnip	Pastinaca sativa L.
48.GingerZingiber officinale49.KakrolMomordica dioica L.50.Broccoli raabBrassica rapa (Ruvo group)	46.	Fennel	Foeniculum vulgare var. dulce
49.KakrolMomordica dioica L.50.Broccoli raabBrassica rapa (Ruvo group)	47.	Turmeric	Curcuma longa
50.Broccoli raabBrassica rapa (Ruvo group)	48.	Ginger	Zingiber officinale
	49.	Kakrol	Momordica dioica L.
51. Agathi Sesbania grandifolia	50.	Broccoli raab	Brassica rapa (Ruvo group)
	51.	Agathi	Sesbania grandifolia
52. Drumstick Moringa oleifera	52.	Drumstick	Moringa oleifera
53.Winged beanPsophocarpus tetragonolobus	53.	Winged bean	Psophocarpus tetragonolobus

Received : 27.07.2016

Revised : 07.10.2016 Accepted : 23.10.2016