International Journal of Pharmacognosy and Life Science

E-ISSN: 2707-2835
P-ISSN: 2707-2827
IJPLS 2020; 1(1): 10-15
Received: 07-11-2019
Accepted: 11-12-2019

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Therapeutic value of wild vegetables of Kashmir valley – Review

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DOI: https://doi.org/10.33545/27072827.2020.v1.i1a.3

Abstract
Wild vegetables have been the mainstay of human diets since times immemorial. There is an increasing consensus that wild foods could significantly contribute to alleviate hunger and cure diseases. Wild vegetables are receiving renewed attention as their potential human health benefits are being recognized. These are the cheapest and most readily available source of food that can contribute significantly to human nutrition and health as these are regarded as easily obtainable and palatable. Earlier people relied solely on wild plants as these were most abundant or readily available. With the advancement in agriculture, wild vegetables are underutilized, the present review documents therapeutic promise of 20 wild vegetables, which have remained an important part of the diet of Kashmiri people in India and are sources of potential therapeutic compounds, useful both for product development and awareness raising. These wild vegetables are generally good source of anti-oxidants, anti-carcinogenic, anti–microbial, hepato-protective, anti-diabetic, immuno-enhancing etc. Their promotion and integration into the human diets could assist in their protracted use and consequent health benefits. If these plant species continue to be neglected and underappreciated, knowledge about them may soon be lost in time and never be recovered. It is believed that there will be more dieticians rather than physicians in coming years as many diseases can be prevented and better health can be maintained by taking the right kind of food and nutrition which contains certain plants with specific functional attributes.

Keywords: wild vegetables, therapeutic, traditional medicine, health, naturopathy

1. Introduction
The rich plant diversity of the North Western Himalayas is utilized by the native communities in various forms as medicine, edible/food, fodder, fuel, timber, etc. Earlier people were dependent on the wild vegetables, with the advancement in agriculture and supply facilities, these non-cultivated plants are not a major component of the diet. A shift from intake of traditional food to contemporary food over past few decades has been attributed to the incidence of different diseases [52, 61]. Unfortunately, the availability of some of the indigenous wild vegetables is decreasing owing to habitat destruction and population pressure. Additionally, many people are not aware of the nutritional value of such plants and regard them as inferior to use. Thus, wild vegetables are currently underutilized, and have been neglected. The multiple roles of wild traditional vegetables as both food and medicinal source have to be recognized as these are among the most important sources of natural antioxidants or for pharmaceutical applications against chronic diseases. The reintroduction of such plants may significantly contribute to human nutrition and health and may reduce the risk of diseases.

2. Wild vegetables in traditional medicine of Kashmir.
As in other parts of the world, wild vegetables have played an important role in traditional healthcare system of this region and have been used in alleviating and curing diseases. The root of *Cichorium intybus* L. is used for curing typhoid, enlargement of liver [36, 59]. *Taraxacum officinale* Weber, used as tonic, diuretic, blood purifier, in jaundice [58, 62]. *Chenopodium foliosum* Asch as laxative against jaundice and in urinary problems [62]. *Malva sylvestris* L. for cough and fever [58]. *P. lanceolata* L as laxative, applied against boils, cough [58, 62]. *Oxyria dygyna* (L.) Mill. for constipation, liver disorders and stomachache [62]. *Rheum emodi* Wall as vermicide, antiseptic on wounds and winter frost [58].

Dipsacus mitis D. Don, used in ritual bath after child birth and against sore throat [58]. *Rumex nepalensis* Spreng against fractured and dislocated joints [58] the leaves and thorns of *Centuria iberica* L. used in burns, skin rashes, to improve eye vision and enhance lactation [63] Leaves of *Amaranthus caudatus* L. used as expectorant, *Nymphea Stellata* Willd used as anti-periodic, cardiac stimulant, *Plantago major* L. leaves used as Styptic, *Portulaca oleracea* Roxb. Leaves used as styptic internally, *Phytolaca acinosa* Roxb. Root extract used against stomach cramps, dysentery, wounds [60]. Stems of *Nelumbium nucifera* Gaertn. used for fever, burning sensation, haematuria [55].

3. Therapeutic promise of wild vegetables

The traditional wild vegetables have some medicinal value which makes them a valuable addition to the diet. Literature survey on the laboratory studies of these plants has shown that most of these plants have the anti-oxidant property followed by anti-inflammatory, antidiabetic, anti-carcinogenic, anti-bacterial and hepatoprotective properties (Fig-1). The implication of oxidative stress in etiology of several chronic and degenerative diseases strongly favours that anti-oxidant therapy represents a promising avenue for treatment [54]

It is believed that with further research into the bioactive composition and mode of actions of the chemical contents of these documented plants, important lead compounds for the treatment of prevailing ailments may further emphasize their role for naturopathy in future.

Table 1: List wild vegetables with possible therapeutic use.

Sl. no.	Botanical name	Vernacular name	Family	Part used	Therapeutic promise
1.	*Amaranthus caudatus* L.	Lissa	Amaranthceae	Leaf	Antioxidant [1], antimicrobial [2], leaves an excellent source of protein [3]
2.	*Dipsacus mitis D.Don*	Wopul haak	Dipsacaceae	Leaf	Anti-fertility and abortifacient [4], against diarrhoea [5]
3.	*Malva parviflora* L.	Soutchal	Malvaceae	Leaf	Antibacterial and anti-inflammatory [6], antioxidant[7]
4.	*Malva sylvestris* Linn	Bagh-soutchal	Malvaceae	Leaf	Antioxidant [8], anti inflammatory [9], antibacterial [9]
5.	*Nymphea alba*	Khor	Nymphaceae	Aerial part	Antibacterial [10], calming, sedative for nervous system, useful in treatment of insomnia and anxiety [11]
6.	*Nymphea stellata*	Buem	Nymphaceae	Stem	Hepatoprotective [12], anti-inflammatory, antidiabetic activity [13],
7.	*Plantago major*	Wethe Gullae	Plantaginaceae	Leaf	Wound healing activity, anti inflammatory, analgesic, antioxidant, weak antibiotic, antiulcerogenic activity [14], antiviral [15], cytotoxic, immunomodulatory [16]
8.	*Portulaca oleracea*	Nunar	Portulacaceae	Leaf	Analgesic, anti-inflammatory [17], wound healing [18], antioxidant [19], antiulcerogenic [20], muscle relaxant [21], hepatoprotective [22], against abnormal uterine bleeding [23]
9.	*Rumex nepalensis*	Abuj	Polygonaceae	Leaf/Root	Purgative [24], antifungal [25], antibacterial [26], cytotoxic [27], anti-inflammatory, free radical scavenging activity [28], antimicrobial [29], antioxidant [30]
10.	*Taraxacum officinale* Weber.	Handh	Asteraceae	Leaf	Anti –inflammatory [31], choleretic, anti-inflammatory, anti-oxidative, anti-carcinogenic, analgesic, antihyperglycemic, anti-coagulatory prebiotic effects [32], diuretic, [33] antioxidant, hepatoprotective [34]
11.	*Rheum emodii* Wall. ex Meisn	Pamb Haak	Polygonaceae	Leaf/Root	Diuretic, liver stimulant, purgative, cathartic, stomachic, anticholesterolaemic, antitumour, antiseptic, antifungal, anti-microbial, anti-Parkinson's, anti-proliferative, immuno-enhancing, antiviral and antioxidant [35]
12.	*Cichorium intybus* L.	Kasni handh	Asteraceae	Leaf /Root	Skin diseases, enlargement of Liver [36], antibacterial [57].
13.	*Centuria iberica* L.	Krtisch	Asteraceae	Leaf	Burns, skin rashes, eye vision and defective lactation [37]
14.	*Nelumbium nucifera* Gaertn.	Nodur	Nelumbonaceae	Stem / Rhizome	Hypoglycemic, psychopharmacological effect, [36] demulcent, beneficial in dysentery and chronic dyspepsia [38]
15.	*Chenopodium foliosum* Asch.	Wan palak	Chenopodiaceae	Aerial part	antimicrobial activity [39], radical-scavenging activity [40]
16.	*Atriplex hotensis*	Wasta haak	Chenopodiaceae		Antioxidant activity [41], diuretic, emetic and purgative [42]
17.	*Phytolaca acinosa*	Lober haak	Phytolacaceae	Leaf	Antioxidant activity [43]
18.	*Plantago lanceolata*	Gulle	Plantaginaceae	Leaf	Antioxidant and anti carcinogenic [44, 45], anti-inflammatory and cytotoxic [46]
19.	*Rumex acetosa*	Tchok chen	Polygonaceae	Leaf	Antimutagenic and cytotoxic [50]
20.	*Oxyria digyna*	Churboo	Oxalidaceae	Leaf	Antioxidant activity [51]

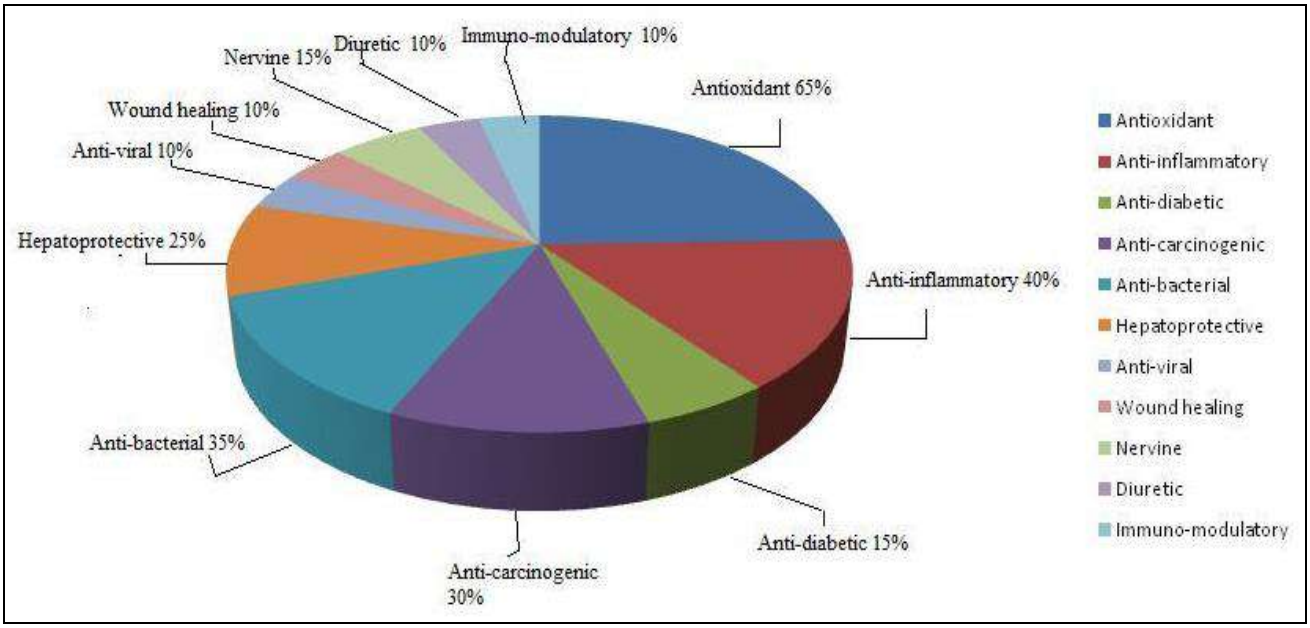

Fig 1: Wild vegetables as therapeutic s

Out of the twenty wild vegetables chosen for study in the present review, there is fairly good number of plants with potential therapeutic properties which can be exploited for healthcare (Fig-2). There are about 13 plants like *Amaranthus caudatus* L., *Malva spp.*, *Plantago spp.*, *Portulaca oleracea* Roxb. etc., which possess impressive anti-oxidative properties. About eight plants possess anti-inflammatory properties. Likewise 6-8 plants have anticancer and other properties. 2-4 plants have either diuretic or liver protectant, vision enhancing or nervine attributes (Fig-2). The prevalence of cancers have been attributed to diet. [52, 53, 61] The search for anticancer plants, particularly those which have remained a part of the diet once is on increase. Heo *et al*. (2009) investigated that *Rumex acetosa* have potential anti-proliferative properties. *Nelumbium nucifera* Gaertn. has been studied to have psychopharmacological properties [36]. The consumption of wild vegetables may provide millions of consumers with the nutrients needed to maintain health and fight off hazardous infections.

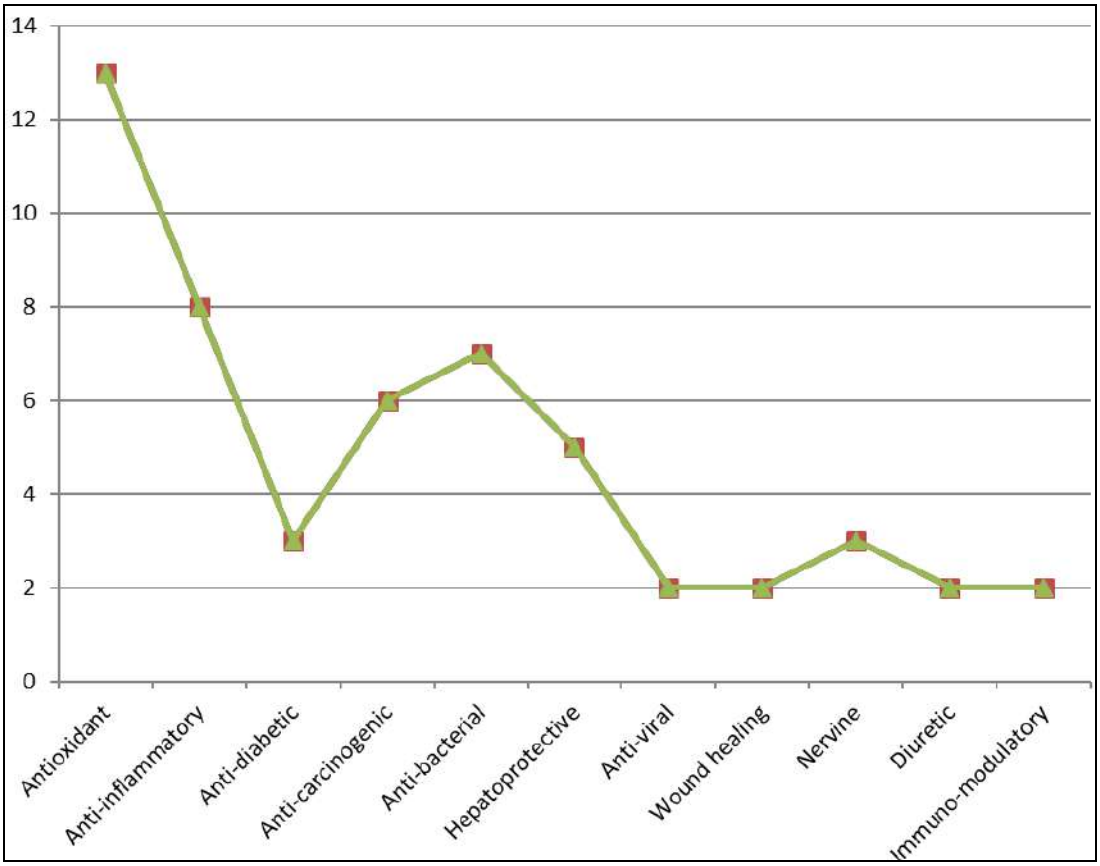

Fig 2: Plants with therapeutic properties in terms of number

Conclusion

Wild vegetables have provided native communities the much needed supplements all through even during the unfavourable weather conditions. The fact that traditional rural communities were and still are nutritionally successful, even during periods of drought, affirms the importance of recognizing and utilizing traditional wild food resources. Compared to conventional cultivated species, wild vegetables are hardy, require less care, and are a rich source of important micronutrients, vitamins and minerals needed to maintain health and promote immunity against infections besides providing food security.

Wild vegetables are among the most important sources of natural antioxidants and have applications against chronic diseases related to oxidative stress. Anti-oxidants from our diet play an important role in helping endogenous antioxidants for neutralization of oxidative stress. The nutrient oxidant deficiency is one of the causes of numerous chronic and degenerative pathologies. (Lien *et al*, 2008). Lack of proper knowledge on the nutritive and medicinal value of wild vegetables has been an important deterrent to their general acceptance and utilization and regards them as inferior to use. Research on potentially exploitable wild vegetable plant species has to be conducted as this would promote their increased utilization. Such information would help in addressing nutritional and healthcare deficiency of Indian communities as this part of India is highly vulnerable to life style and degenerative diseases. This information should be useful for both product development and awareness raising. These wild vegetables could be recommended as a source of bioactive compounds with potential therapeutic compounds and health benefits.

Conflict of Intrest

Nil

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