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Research Paper

Ethnobotanical and Ecological Study of *Taraxacum Officinale* F.H. Wigger in Upper Hunza (Gojal)

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Abstract

Taraxacum Officinale F.H. Wigger is a medicinal herb, having many medicinal uses. Our studies showed variations in selected five zones in ethnobotanical and morphological parameters. Mostly this herb is used for skin disorders in all zones but with the variations in zones, its medicinal uses have been changed i.e.: Diabetes, Jaundice, and TB. Also, variations are noticed in administration from zone-1 to zone-5. These studies showed the *Taraxacum Officinale* from Zone-4 is the best for its propagation because of maximum mature secondary compounds. Furthermore, this herb is used for the therapy of different skin disorders, and it protects the skin from harmful rays of sunlight. This plant is also used in cosmetics.

Introduction

The Northern area of Pakistan is positioned at the seam of three huge mountain ranges i.e. Karakorum, Himalaya and Hindu Kush (Shinwari, et al., 2002). As we all know the northern mountain range are eminent for its biodiversity and diversified type of weather. About 25,000 species are found in this mountain, beyond which 10,000 are valuable and medicinal plants while 10 percent of the world species are present here (Matin et al., 2001). There is a wide collection of civilization, customs and lore. The people of this range are using these plants for their benefits including food, silage, firewood, medicines and timber (Hussain et al., 1996). The longitude of the northern area of Pakistan is between 71^0 and 75^0, north latitude is about 32^0 and 37^0. It is known that ethnobotanical works have been done in numerous area of Pakistan (Gilani et al., 2001). But the other parts of Hunza-Nagar district are still unexplored

(Khan et al., 2011). Due to the difference in climate, altitude, latitude and further topographic conditions, this area is pretty rich and various. The four kinds of weather are the plus point of the area to be richer in flora diversity. The temperature of the area goes to maximum 10 to 14 C in summers while in winters the temperature can reaches to -21 to -30 C.

Materials and Methods

The study is conducted at upper Hunza, Gojal, district Hunza, Gilgit Baltistan for the significance of *Taraxacum Officinale* F.H. Wigger in selected five ecological zones. After interviewed from peoples for its ethnobotanical studies in five ecological zones showed variations in uses. For this study five villages of Gojal as the five zones .i.e. Shisket, Hussaini, Khyber, Moorkhun and Sartiz Gircha were selected. These areas having differences in the altitude; latitude and longitude. Zone-1: Shisket, having altitude; 2506, latitude; 36.358795, and longitude; 74.865664. Zone-2: Hussaini, have altitude; 2449, latitude; 36.423797, and longitude; 74.879851. Zone-3: Khyber, have altitude; 2728, latitude; 36.58054, and longitude; 74.803183. Zone-4: Moorkhun, with altitude; 2750, latitude; 36.612584, and longitude; 74.866478. Zone-5: Sartiz Gircha, having altitude; 2743, latitude; 36.6478, and longitude; 74.848532. Morphological studies were taken from selected herb i.e. length, height, width, nodes distance numbers of leaves, number of roots and length of pedicle etc.

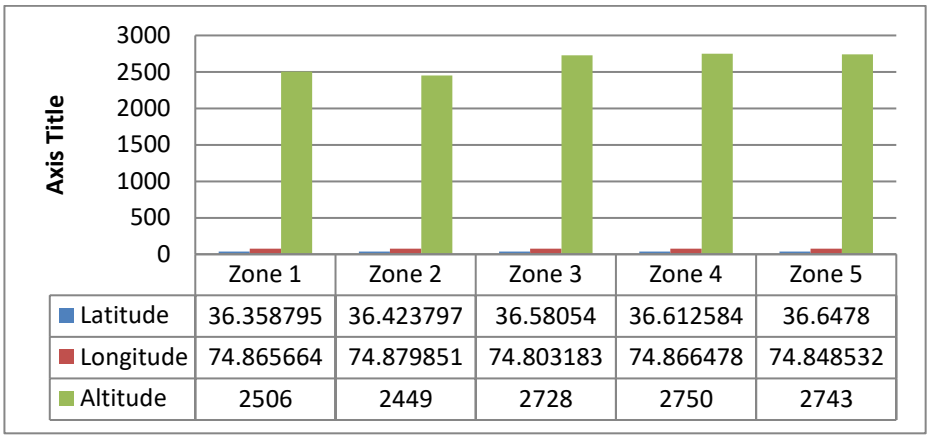
Taraxacum officinale F.H. Wigger

Botanical name:	*Taraxacum officinale* F.H. Wiggers
Vernacular name:	Talkhiting
Family:	Asteraceae.
Part used:	Leaves of Flower
Occurrence:	This plant is commonly on agricultural lands and in gardens
Folk Medicinal used:	The decoction of flowers or dried leaves and roots is used for the care of skin from sun or other skin inflammation and for the treatment of jaundice and pneumonia.

Results and Discussion

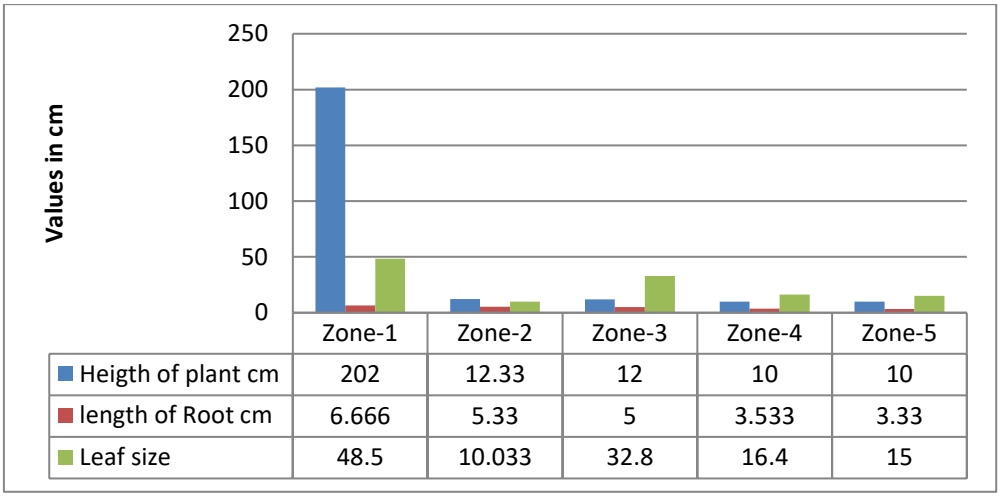
Five Zones were selected for the study. Latitude, Altitude and Longitude is given in Table-1.

Table-1: Five zones latitude, longitude and altitude



	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
Latitude	36.358795	36.423797	36.58054	36.612584	36.6478
Longitude	74.865664	74.879851	74.803183	74.866478	74.848532
Altitude	2506	2449	2728	2750	2743

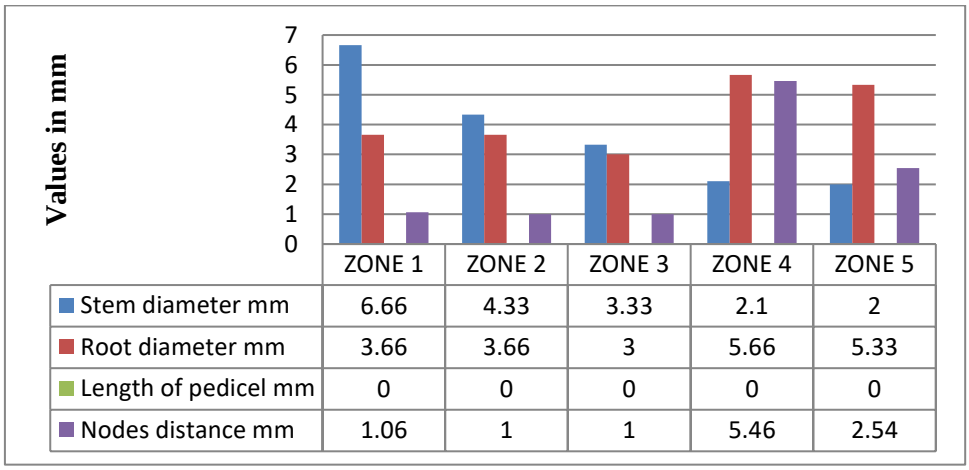
Table-2: Height of plant and length of the root of *T. officinale*.



	Zone-1	Zone-2	Zone-3	Zone-4	Zone-5
Heigth of plant cm	202	12.33	12	10	10
length of Root cm	6.666	5.33	5	3.533	3.33
Leaf size	48.5	10.033	32.8	16.4	15

The plant is higher in zone-1 and gets decreases as we move through the zones. The leaf size also gets small as moved from zone-1 to zone-5. These plants have a small root length.

Table-3: Stem diameter, root diameter, nodes distance and length of pedicel of *T. officinale*.

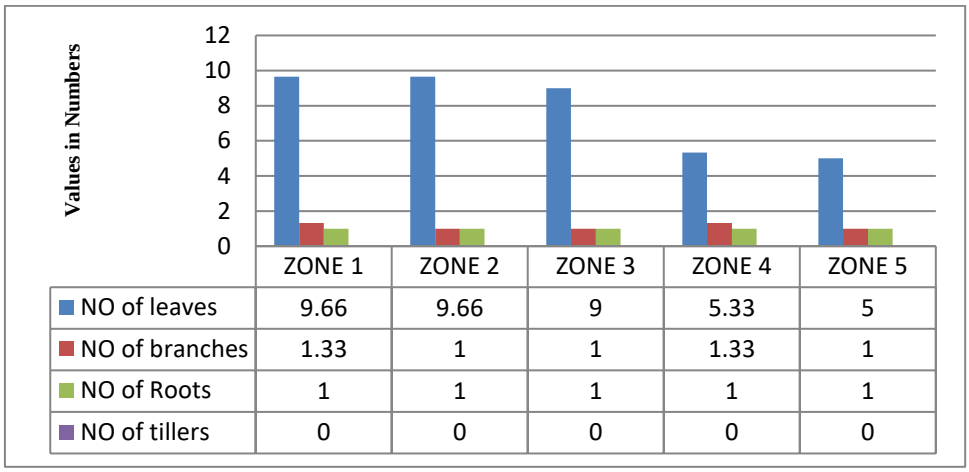


	ZONE 1	ZONE 2	ZONE 3	ZONE 4	ZONE 5
Stem diameter mm	6.66	4.33	3.33	2.1	2
Root diameter mm	3.66	3.66	3	5.66	5.33
Length of pedicel mm	0	0	0	0	0
Nodes distance mm	1.06	1	1	5.46	2.54

The stem's diameter is maximum in zone-1 and gradually decreased from zone-1 to zone-5. The roots diameter is minimum in zone-1 up to zone-3 while it gets increases in zone-

4 and zone-5. In zone-4 the node distance is higher as compared to other zones and length of pedicel did not found in this plant.

Table-4: Number of leaves, branches, roots and tillers, of *Taraxacum officinale*.



	ZONE 1	ZONE 2	ZONE 3	ZONE 4	ZONE 5
NO of leaves	9.66	9.66	9	5.33	5
NO of branches	1.33	1	1	1.33	1
NO of Roots	1	1	1	1	1
NO of tillers	0	0	0	0	0

The numbers of leaves are higher zone-1 and zone-2, and it gradually the number get decreases as we move toward zone-5, there were litter numbers of branches while tillers are not found in this plant and it is having a tap root.

Table-5: This table is representing leaf, root and stem color of *Taraxacum officinale*.

	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
Leaf color	Light Green	Light Green	Light Green	Light Green	Light Green
Root color	Dark Brown	Dark Brown	Dark Brown	Dark Brown	Dark Brown
Stem color	Light Green	Light Green	Light Green	Light Green	Light Green

The table for leaf, root and stem color shows no change from zone one to zone five. They all remain the same.

Table-6: This table is showing leaf arrangement of plant *Taraxacum officinale*.

Zone	Leaf arrangement	Root arrangement
Zone 1	Single	Tap Root (single)
zone 2	Single	Tap Root (single)
Zone 3	Single	Tap Root (single)
Zone 4	Single	Tap Root (single)
Zone 5	Single	Tap Root (single)

The table for leaf arrangement shows single leaf and single tap root from zone 1 to zone 5.

Table-7: Ethnobotanical studies of *Taraxacum officinale* in Five Zones

	Prominent Diseases	**Other Disease**	**Plant part used**	**Administration**	**Maturation period**	**Along with other plant**	**Side effects**
Zone-1	it will peel out pimple from the skin	Cure skin used as sun block. Jaundice and pneumonia.	flower	directly used	throughout the summers	nil	nil
Zone-2	Skincare, heal wound of skin, Skin disorder	Cosmetics and Pneumonia, jaundice, TB	Flowers, flower or root	Paste, originally used at a time	throughout the summer	nill	nill
Zone-3	Diabetics, cure of skin from harmful sunrays	nil	flower, Stem	Direct/ eatable, direct used	March – Nov, throughout summers	nill	nill
Zone-4	protect skin from sunlight harmful rays, flu, Fairness, diabetics, Pneumonia	cosmetics	Whole plant, flower and root	drink or massage to body or face by mixing with milk	March- Dec, throughout summers	nill	high dosage is not suitable
Zone-5	for healthy life, Skin care, jaundice and pneumonia.	cosmetics	flowers	as a vegetable, paste	throughout the summer	Potato, milk	nil

Taraxacum officinale is common in all zones. As shown in the above table, the same plant varies cure for disease from zone to zone. It is due to the differences in the altitude and latitude and longitudes of the areas. Due to this ecological footprint, the use of the herb showed its variations from zone to zone. According to results, the prominent disease cured by this herb is the care for skin from the sun or other skin inflammation. Several other diseases are treated by use of this plant such as diabetics, peeling out the skin pimples, flu, and wound healing. Jaundice and Pneumonia are also cured by using the dried leaves and roots of this herb.

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