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## Comparative Study of the roots of the plants *Ziziphus oenoplia* and *Ziziphus jujuba*

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**ABSTRACT**

Aim of present study is to evaluate *Ziziphus oenoplia* and *Ziziphus jujuba* by its Pharmacognostically and Phytochemically with different parameter in order to give possible scientific validation. The roots are astringent, bitter, antihelmintic, digestive and antiseptic. They are useful for treating hyperacidity, ascari infection, abdominal pain and healing of wounds. Jujuba leaves are also used in the treatment of fever and its fruit are effective in herbal remedies. It aids weight gain and improve muscular strength stamina and roots are also effective in antibacterial, antifungal. A thick root was studied. Transverse section of roots was circular in outline. Outer circular layer of cork was followed by thin walled epidermal cells. Xylem around the well-developed xylem cells and also done the powder microscopy of root powder and shows the fibre and polygonal cells.

**Keywords:** *Ziziphus jujuba*, *Ziziphus oenoplia*, Transverse section, Plant powder

**1. Introduction**

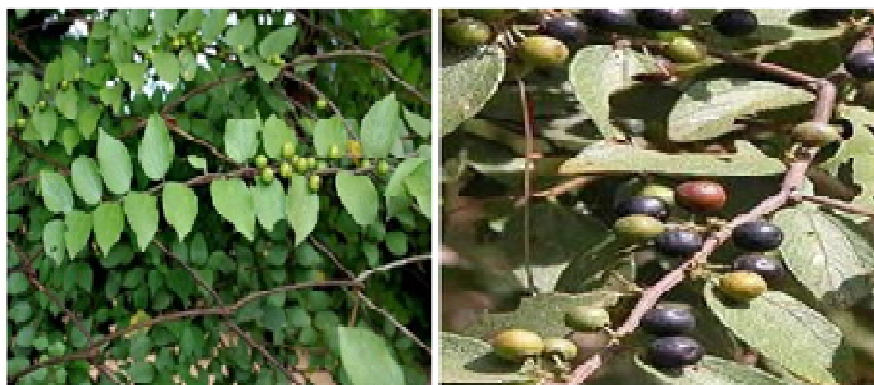
A spreading thorny shrub grows up to 1.5 meters in height. Leaves simple, alternate, ovate-lanceolate, acute, oblique, flowers green in subsessile axillary cymes. Fruits globose drupes, black contain single seed. Jujuba small spreading tree, with drooping branches height, 5 to 8 meters trunk girth, 85 cm, bark rough, gray or dull black, irregularly cracked, covered with a thick layer of green moss in the case of older trees.

**1.1 Distribution**

Indian subcontinent, China and Southeast Asia.

**1.2 Macroscopical Characters**

The roots are astringent, bitter, antihelmintic, digestive, and antiseptic. They are useful for treating hyperacidity, ascari infection, abdominal pain and healing of wounds. The leaves are simple, alternate, ovate-lanceolate, spreading sometimes climbing, thorny shrub for growing to 1.5 m in height.



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No.	Features	Observation ( <i>Z. oenoplia</i> )	Observation ( <i>Z. jujuba</i> )
1	Color	Yellowish-brown	Yellowish-brown
2	Odour	Characteristics	Characteristics
3	Taste	Bland	Acrid
4	Shape	Cylindrical	Cylindrical
5	Size (thickness)	0.5-0.8 cm	0.1-1 cm
6	Types	Tap root	Tap root
7	Special Feature	Presence of secondary and tertiary root scars	Presence of secondary and tertiary root scars

## 2. Material and Methods

### Plant Material

Roots of *Ziziphus oenoplia* was collected from the road sides of Khurdahi bazaar Arjunganj Lucknow in the month of October.

### Macroscopic Study

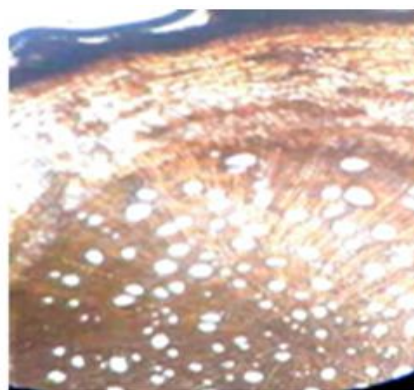
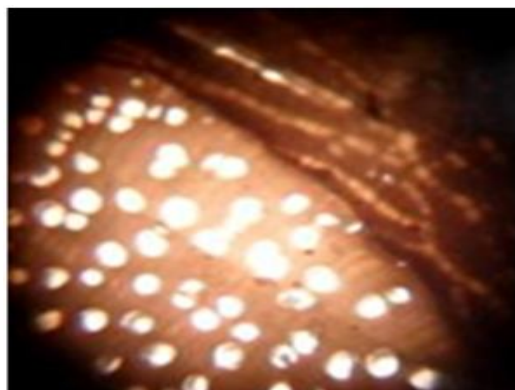
A thick root was studied. It is 1 cm in diameter. Presence of secondary and tertiary root and yellowish brown in colour and its having characteristic odour, acrid taste, and hard texture.



Morphological Features of *Ziziphus jujuba* and *Ziziphus oenoplia* root

**2.2 Microscopical study:** Transverse section of root of *Ziziphus jujuba* was studied and found cork, air vessels and medullary rays and also found the thin epidermal cells. And

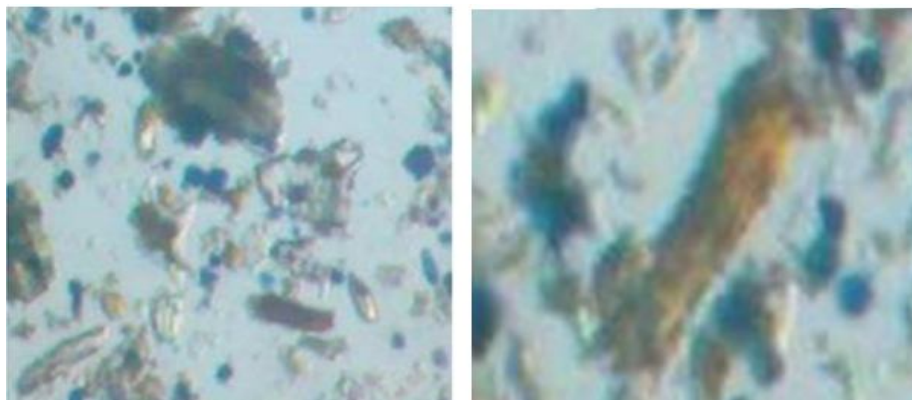
transverse section of *Ziziphus oenoplia* was studied and observe that cork, cortex, cambium and phellogen, medullary rays are present in the structure.



Transverse section of root of *Z. jujuba* and *Z. oenoplia*

**2.3 Powder Microscopy of root of *Z. jujuba* and *Z. oenoplia*:** The powder microscopy of *Z. oenoplia* and *Z. jujuba* root shows

starch grain, calcium oxalate crystal, wood, fiber are shown in powder study.



(Powder Microscopy of *Z. jujuba* and *Z. oenoplia* root powder)

## 2.4 Physicochemical Parameters

**Moisture content of root of *Ziziphus oenoplia* & *Ziziphus jujuba*:**

S.no.	Quantative standard	% of <i>Z. oenoplia</i>	% of <i>Z. jujuba</i>
1.	Moisture content	0.413%	0.545%

## 2.5 Ash Value

**Ash value of root of *Ziziphus oenoplia* & *Ziziphus jujuba*:**

Ash values of sample (n=3).

S.no.	Ash value	% of <i>Z. oenoplia</i>	% of <i>Z. jujuba</i>
1.	Total ash value	3.83%	6.285%
2.	Acid insoluble ash	2.325%	4.085%
3.	Water soluble ash	3.045%	5.138%
4.	Alcohol soluble ash	3.371%	6.431%
5.	Sulphated ash	1.865%	4.362%

## 2.6 Extractive Value

**Extractive values of *Ziziphus oenoplia* & *Ziziphus jujuba***

Extractive values of Sample (n=3).

S.no.	Extractive values	Nature Of <i>Z. oenoplia</i>	Nature of <i>Z. jujuba</i>	Colour Of <i>Z. oenoplia</i>	Colour Of <i>Z. jujuba</i>	Percentage yield of <i>Z. oenoplia</i> %w/w	Percentage yield of <i>Z. Jujuba</i> %w/w
1.	Alcohol soluble extractive	Pasty	Semisolid	Yellowish	Yellowish	15.867%	10.155%
2.	Water soluble extractive	Pasty	Semisolid	Brownish	Black	20.716%	15.665%
3.	Chloroform soluble extractive	Pasty	Semisolid	Yellowish	Dark brown	10.224%	7.845%

**Color of extract of root in different solvent *Ziziphus oenoplia* and *Ziziphus jujuba*****Color of extract**

S. No.	Solvents	Color of <i>Z. oenoplia</i>	Color of <i>Z. jujuba</i>	Nature of <i>Z. oenoplia</i>	Nature of <i>Z. Jujuba</i>
1.	n-hexane	Yellowish green	Yellowish	Semisolid	Liquid
2.	Diethylether	Blackish brown	Yellowish	Liquid	Liquid
3.	n-butanol	Dark brown	Yellowish brown	Liquid	Pasty
4.	Methanol	Brown	Yellowish brown	Pasty	Pasty
5.	Water	Yellowish	Brown	Semisolid	Pasty

**2.7 Phytochemical Screening**

The chemical tests on various extracts gives following results.

Phytochemical analysis of successive solvent extract.

S.no.	Type of Phytoconstituents	Name of chemical test	Plant extract in different Solvent							
			Hexane		Chloroform		Methanol		Water	
			O	J	O	J	O	J	O	J
1.	Carbohydrate	a. Molisch's test	-	-	-	-	+	+	+	+
		b. Benedict's test	-	-	-	-	+	+	+	+
2.	Alkaloid	a. Mayer's test	-	-	-	-	+	+	+	+
		b. Wagner's test	-	-	-	-	-	+	+	+
		c. Hager's test	-	-	-	-	-	+	+	-
3.	Glycosides									
	a. Anthracene glycoside	a. Modified Borntrager's test	-	-	-	-	-	-	-	-
	b. Saponin glycoside	a. Foam test	-	-	+	-	+	+	+	-
		b. Haemolytic test	-	-	+	+	+	+	+	+
	c. Cardiac glycoside	a. Keller Kiliani test	-	-	-	-	+	-	-	-
		b. Beljet test	-	-	-	-	-	-	-	-
4.	Steroids	a. Salkowski test	-	-	-	-	+	+	+	+
		b. Liebermann - Burchard test	-	+	+	+	+	+	+	+
5.	Protein & Amino acids	a. Ninhydrin test	-	-	-	-	+	+	+	+
		b. Biuret test	-	-	-	-	+	+	+	+
6.	Starch	a. Iodine test	-	-	-	-	+	+	+	+
7.	Tannins	a. Ferric Chloride test	-	-	-	-	+	+	+	+
		b. Alkaline reagent test	-	-	-	-	+	+	+	+

O = *Z. oenoplia*, J = *Z. jujuba*

### 3. Conclusion

On the basis of observation the species of *Zizyphus oenoplia* and *Zizyphus jujuba* Linn. are very little difference. It may also provide suitable criteria to differentiate the root parts used of *Zizyphus oenoplia* and *Zizyphus jujuba* Linn which is widely used in herbal drug industries have been investigated with respect to their morphological and pharmacognostical details and its powder microscopy and others chemical testing.

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