

## PHARMACOGNOSTIC STANDARDIZATION OF *ZIZYPHUS JUJUBA* LAMK. LEAVES & FRUITS.

Shreya Bari and Meenakshi Vaidya\*

SVKM'S Mithibai College, Department of Botany, Vile-Parle West  
Mumbai 400 056, India.

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\*Corresponding Author

Dr. Meenakshi Vaidya

SVKM'S Mithibai College,  
Department of Botany, Vile-  
Parle West Mumbai 400 056,  
India.

### ABSTRACT

Medicinal plants have curative properties due to the presence of various complex. The herbal products today, symbolize safety in contrast to the synthetics that are regarded as unsafe to humans and environment. Pharmacognostic studies of crude drugs play a very important role in identification of purity drugs. The plant of *Ziziphus jujuba* is commonly called as Chinese date or Indian cherry or Ber belonging to the family Rhamnaceae. The present study includes physicochemical parameters like total ash, water-soluble ash, acid insoluble ash, extractive values and pharmacognostic analysis. The study will provide the standard values of the parameters, which will

help in the correct identification of the crude drug.

**KEYWORDS:** Pharmacognostic, *Ziziphus jujuba*, physicochemical, total ash, water-soluble ash, acid insoluble ash, extractive values.

### INTRODUCTION

*Ziziphus jujuba* belongs to family Rhamnaceae (Hooker, 1883). It is a medium sized, fast growing, deciduous spiny tree with dense spreading crown. Leaves are variable with greenish yellow flowers. Fruits are green and the turn pale yellow when ripe.

Synonyms- *Ziziphus mauritiana* Herb, *Ziziphus sororia* Schult, *Ziziphus trinervius* Roth, *Rhamnus jujuba* Linn.

**COMMON NAMES**

Chinesedate, Indian Cherry, Ber ,  
Bor, Bogari, Bore, Badari,  
Kuvai, Berra, Boyedi, Gabartagi,  
Ph-alashayshira, Lanta, Jujubeira,  
Mahdabera, Kullari, Gudaphala.

**CHEMICAL CONSTITUENTS**

The plant *Ziziphus jujuba* chemically contains flavonoids, saponins, tannins, Vitamin A, Vitamin B, sugars, mucilage, calcium, phosphorus, iron. The fruits contain proteins, fats, carbohydrates, calcium, phosphorus, iron, carotene, thiamine, riboflavin and vitamin C. The fruits contain alkaloids such as Sanjoinenine, Franguloine, Amphibine-D and four peptide alkaloids. The leaves contain alkaloids such as coclaurine, isoboldine, norisoboldine, asimiloboldine, iusiphine and iusirine (Singh & Lal, 1982) Flavonoids such as quercetine, kaempferol, rhamnoside, isospinin are present in the leaves. Terpenoids such as alphaltolic acid, caffeoyle alphaltolic acid and ceanthoic acid dimethyl ester and phenolic compounds are also found in leaves (Kapoor, 1990).

**USES:** The plant *Ziziphus jujuba* is used medicinally for a wide number of ailments. The seeds, fruit of jujuba have been used in traditional medicine for anxiety and insomnia, and as an appetite stimulant or digestive aid. The fruit, being mucilaginous, is very soothing to the throat and decoctions of jujuba have often been used in pharmacy to treat sore throats (Kirtikar & Basu, 2006).

**MATERIAL AND METHODS**

**Collection:** The fresh plant material of *Ziziphus jujuba*. Was collected from Dahanu, District –Thane; Borivali, Mumbai & authenticated.

**DETERMINATION OF TOTAL ASH VALUES**

Weigh a clean, dry silica crucible. Add 2 gram of powdered drug into the pre-weighed crucible. Heat the crucible in a muffle furnace at 200°C, and later increase the temperature to 60°C. The ash initially becomes black, and then turns white with the increase in temperature, as it becomes carbon-free. After the ash is Carbon free (1-2hours), remove the crucible from the furnace, and transfer it to a dessicator and cool it. Weigh the crucible containing ash

**DETERMINATION OF ACID INSOLUBLE ASH CONTENT (Shah and Quadry, 1983)**

Transfer the total ash from the above procedure to a 100 ml beaker containing 25ml of 5% HCl, and boil for 5 minutes. Filter the solution including the ash to a Whatman filter paper [ash less]. Rinse the beaker twice with distilled water, and pour the washing through the same filter paper, then wash the ash with hot water. After complete filtration, the filter paper containing the ash is dried in an oven at 100°C, and it is then put in a pre-weighed silica crucible and kept in a muffle furnace at 600°C. After complete ignition [1 to 2 hours], cool the crucible in a dessicator and weigh it.

**DETERMINATION OF EXTRACTIVE VALUES**

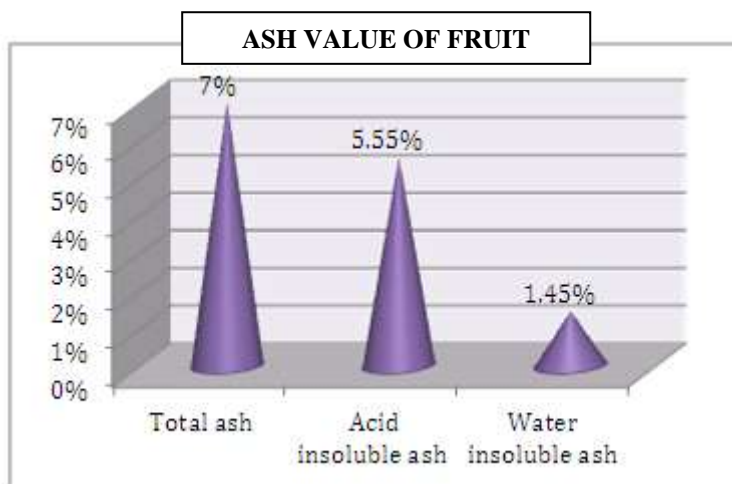
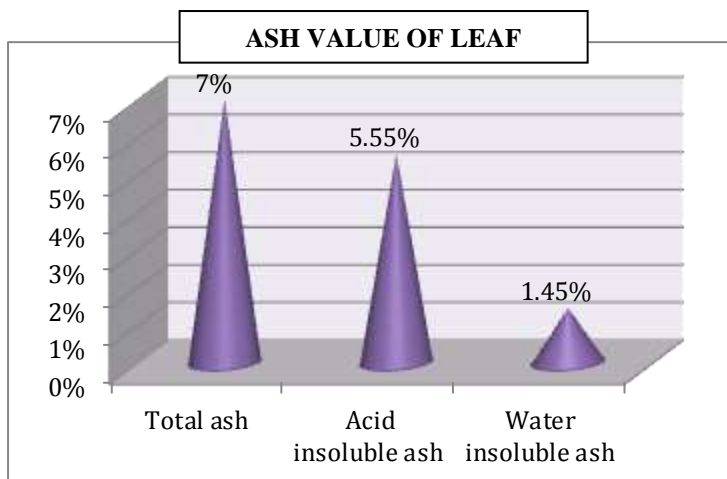
Weigh 5 gram of the dried powdered plant material (Leaves ad fruits) and transfer it to a dry 250ml conical flask. Add 100 ml of 90% Solvent (alcohol, chloroform water, methanol, ethanol, water, solvent ether, petroleum ether, ethyl acetate etc,) and shake it well. Cork the flask, and set it aside for 24 hours on a mechanical shaker. After 24 hours, filter the mixture, and take 25 ml of the filtrate in a pre- weighed porcelain dish. Evaporate to dryness on a water bath or sand bath, or in an oven at 100°C. Cool the content in a desiccator and weigh. Calculate the percentage (solvent) extractive value with reference to air dry drug.

For determination of percentage extractive values (Trease and Evans, 1983, Wallis, 1985)

The pharmacognostic tests have been performed as mentioned by Khandelwal 2007.

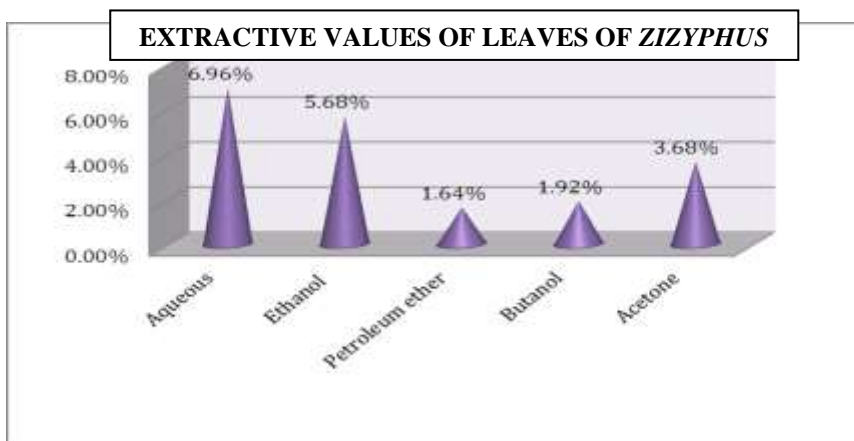
**OBSERVATIONS AND RESULTS**

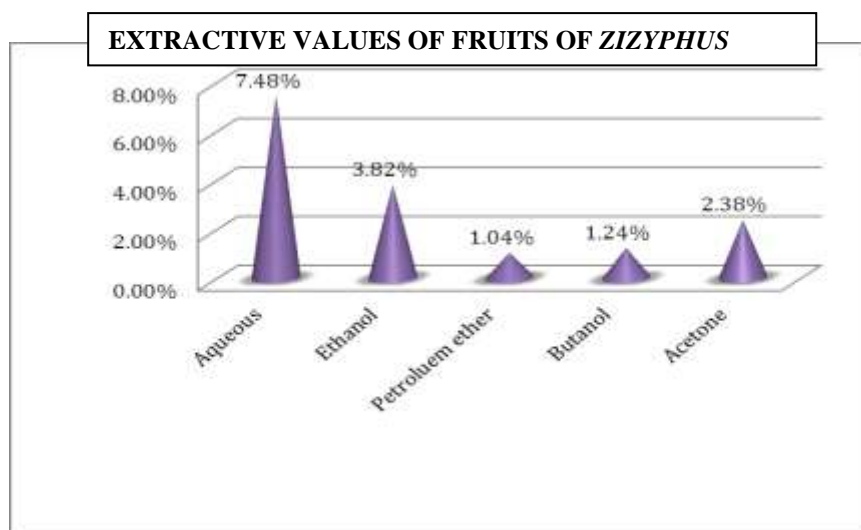
Ash value of powdered leaves & fruits of <i>Ziziphus jujuba</i>		
	Leaves	Fruits
<b>Total ash</b>	7%	5.6%
<b>Acid insoluble ash</b>	5.55%	3.85%
<b>Water soluble ash</b>	1.45%	1.75%



**EXTRACTIVE VALUES**

Extractive values of leaves & fruits of <i>Zizyphus jujuba</i>		
	Leaves	Fruits
Aqueous extractive value not less than	6.96%	7.48%
Ethanol extractive value not less than	5.68%	3.82%
Petroleum ether extractive value not less than	1.64%	1.04%
Butanol extractive value not less than	1.92%	1.24%
Acetone extractive value not less than	3.68%	2.38%





TEST	OBSERVATIONS	INFERENCE
(Molish's Test) T.S. + $\alpha$ -Naphthol in Alc.+ conc. HCl	Violet ring formed at the junction of two liquids	Carbohydrates present
(Fehling's test) T.S. + Fehling's A+ Fehling's B (Heat in water bath)	Yellow precipitate turns Brick red	Reducing sugars present
(Benedict's Test) T.S. + Benedicts reagent	Solution appears green and yellow	Reducing sugars present
(Barfoed's Test) T.S.+ Barfoed's reagent (keep in boiling water bath)	Red ppt.	Monosaccharides present only in leaf
(Pentose sugars) T.S.+ HCl+ crystals of Phloroglucinol	Red colour appears	Pentose sugars present
(Cobalt Chloride Test) T.S. + cobalt chloride + NaOH	Solution appears greenish blue	Glucose present in fruit only
(Mucilage test) Powdered drug in aqueous KOH	Swelling in the solution	Mucilage present in leaf only
(Test for proteins) T.S.+ 40% NaOH+ 10% Lead acetate (Boil)	Solution turns black due to PbS formation	Proteins containing sulphur present in leaf only
(Ninhydrin test) T.S. + Ninhydrin solution (boiling water bath)	Purple colour appears	Amino acid present
T.S. + Chloroform + conc. Sulphuric Acid	Chloroform layer appears red	Steroid present
(Legals Test) T.S. + Pyridine + Sodium Nitroprusside	Red colour	Cardenoloids present in leaf (Cardiac Glycosides)
(Keller-Killiani test) T.S.+ glacial acetic acid+ $FeCl_2$ + conc $H_2SO_4$	Reddish brown colour	De-oxysugars present in fruit only
( Saponin glycosides test) Shake the drug vigorously with water	Persistent foam observed	Saponin present
(Test for flavonoids) T.S.+ 95% Ethanol+ conc HCl+ magnesium	Pink colour solution	Flavonoids present
Wagner's reagent	Reddish brown	Alkaloids present
Dragendroff's reagent	White ppt	Alkaloids present
(Test for tannins and phenolic compounds) T.S+ Gelatin solution	White ppt	Tannins and Phenols present

Section +Hydrogen peroxide (Tests for enzymes)	Oxygen gas evolves	Enzymes present
Section+ Catechol solution (Test for Organic Acid)	Section turns yellowish brown	Enzymes present
T.S. + Calcium chloride solution (Confirmatory Test for Citric Acid)	Ppt. observed on boiling and cooling	Citric acid present
T.S.+ Lead acetate	White gelatinous ppt.	Citric Acid present
T.S.+ ammonium molybdate	White ppt. soluble in NaOH	Sulphate present in fruit only
T.S. + HNO <sub>3</sub>	Yellow crystalline ppt	Phosphate present in fruit only
T.S. + H <sub>2</sub> SO <sub>4</sub>	White ppt	Chloride present in fruit only
	Brown colour at the junction	Nitrates present in the fruit

### SUMMARY AND CONCLUSION

Pharmacognostic studies of *Calophyllum* leaves have been studied by Vaidya et al (2015), phytochemical screening of Aqueous & Methanolic extract of young and mature leaves of *Psidium Guajava* (Guava) has been studied by Vaidya, (2012) and Pharmacognostic standardization of leaves of *Buchanania lanzan* Spreng. Has been studied by Vaidya & Shingadia (2012). Taking into consideration the fact that since more than 7500 species are being used in healthcare, standardization of drugs thus becomes a stupendous task. The present work is a small contribution in this direction.

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