



**Title: Preliminary standardization of *lashuna*: A potential drug  
for postmenopausal osteoporosis.**

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**Abstract:**

Osteoporosis is a major international health problem, accentuated by increasing longevity. Osteoporosis as “a systemic skeletal disease characterized by low bone mass and bone architectural leading to increased risk”. Menopause is normal process but now a day it becoming major health problem in developing countries like India. In Ayurveda Menopause deals with *jarapakvaavasta* of the body Jara and Rajonivritti are manifested due to progressive reduction in the functional ability of agnis, which results into an inadequate tissue nutrition. This nutritional imbalance triggers the irreversible degenerative changes in „Sapta Dhatus“. The disease Osteoporosis is somewhat similar to description of Asthi Kshaya in which metabolism of Asthi Dhātu is disturbed. Rasayana therapy has proved efficacious in managing and preventing many chronic conditions till date. As Postmenopausal Osteoporosis is a disease related to aging, Rasayana can provide better alternative in increasing quality of life.

Here, the drug *Lashuna* also one of the Rasayana guna dravya.



**Keyword:**

*Lashuna*, Osteoporosis, Post Menopause

**Introduction:**

Old age is vulnerable time for both men and women – but for women it is even more. So, in addition to process of senility, women suffer simultaneously from the inevitable scars of Menopause.

In the present study, *Asthi Kshaya* will be taken for the study, where there will be decrease in the density of the bone tissue. The term “Osteoporosis” was coined by Pommer in 1885 which literally means “porous bones”. Osteoporosis is defined as “a disease in which the density and quality of the bone are reduced, leading to weakness of the skeleton and increased risk fracture, particularly of the spine, wrist and hip”. In 1994 World Health Organization

defined Osteoporosis as “a systemic skeletal disease characterized by low bone mass and bone architectural leading to increased risk”

Reference regarding Menopausal/postmenopausal period of women is not described in the classics. Jara and Rajonivritti are manifested due to progressive reduction in the functional ability of agnis, which results into an inadequate tissue nutrition. This nutritional imbalance triggers the irreversible degenerative changes in „Sapta Dhatus“. The disease Osteoporosis is somewhat similar to description of Asthi Kshaya in which metabolism of Asthi Dhatu is disturbed.

Rasayana therapy has proved efficacious in managing and preventing many chronic conditions till date. As Postmenopausal Osteoporosis is a disease related to aging, Rasayana can provide better alternative increasing quality of life. Here, the drug Lashuna also one of the Rasayana guna dravya.

### **Aims\_and\_Objects:**

Pharmacognostical and phytochemical analysis of *Lashuna vati* for osteoporosis.

### **Material andan Methods**

- Collection, identification and authentication of raw drugs
- Preparation of drug at pharmacy
- Phyto-chemical analysis of compound drug

### **Observations:**

### **Collection, Identification and Authentication of Raw Drugs:<sup>1</sup>**

The raw ingredients were procured from vadodhara, gujarat. The raw drugs are indentified and authenticated by the Dept. of *Dravya guna*, Parul Institute of Ayurveda, Parul University, Vadodara.

### **Preparation of the Drug at Pharmacy:**

Drug is dried under shade till it completely dried and made into fine powder. Mixed this powder with water made it bowels form and dried in oven at 100 °c and the dried bowels is converted into granules form, to this added binding agent(Gum acacia) and The dried material is fed into tablet pressing machine and final product is in the form of tablet weighting approximately 500mg.

### **Phytochemical Analysis of Compound Drug:**

*Lashunadi vati* was analyzed at Vasu Research Center, Vadodara.

### **Results:**

#### **Organoleptic parameters:**

Sl.No	Parameters	Sample
1.	Appearance	Compressed tablet
2.	Colour	Brown
3.	Taste	Bitter
4.	Odour	Sulphurous odour

**Phyto - chemical parameters:** *Lashuna vati* was evaluated for various physico-

chemical analyses like loss on drying, total ash, Acid insoluble ash, Water soluble extract, Alcohol soluble extract, pH, uniformity of weight, friability, hardness etc.

Sl.No	Parameters	Sample
1.	Loss on drying	5.87%
2.	Total ash	4.64%
3.	Acid insoluble ash	2.01%
4.	Water soluble extract	82.29%
5.	Alcohol soluble extract	37.11%
6.	pH (1% solution)	4.49%
7.	Uniformity of weight	0.560g
8.	Friability test	1.14%
9.	Hardness test	5.4kg/cm <sup>2</sup>
10.	Disintegration time	75min
11.	HPTLC finger printing	Refer

### High-performance Thin Layer Chromatography study:

#### Preparation of test solution (T):

Accurately weighed 5.0g of sample individually in iodine flask and add 20ml methanol to it. Vortex it for 10 min ,heat for 10 min ,filters it with whatman filter paper no.1 and then concentrate it on water bath up to 2ml. Filter again if required and use for HPTLC profiling

### Preparation of spray reagent (Anisaldehyde-sulphuric acid reagent):

0.5 mL anisaldehyde EP is mixed with 10 mL Glacial acetic acid AR, followed by 85MI Methanol AR and 5mL sulphuric acid 98%GR.

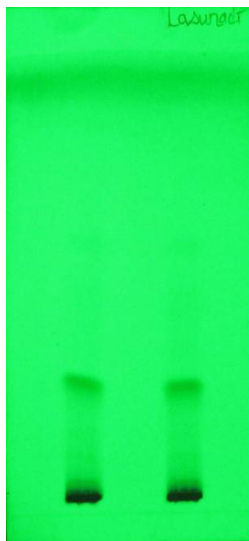
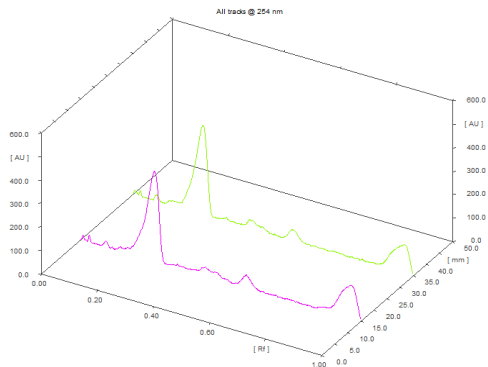
Chromatographic conditions:	
Application mode	CAMAG Linomat 5- applicator
Filtering system	Whatman filter paper no.1
Stationary phase	MERCK- TLC / HPTLC silica gel 60 F254 on aluminium sheets
Application (y axis) start position	10mm
Development (y axis) end position	90mm from plate base
Space between band	10mm
Sample application volume	8µL
Development mode	CAMAG TLC twin trough chamber
Chamber saturation time	30 minutes
Mobile phase (MP)	Toluene : ethyl acetate(7:3)
Visualization	@254nm,@366nm and @540nm (after derivatization)
Spray reagent	Anisaldehyde sulphuric acid reagen
Derivatization mode	CAMAG- dip tank for

	about 1 minute
Drying mode,temp & time	TLC plate heater preheated at 100 ±5°C for 3 minutes

3	0.38
4	0.60
5	0.72
6	0.89

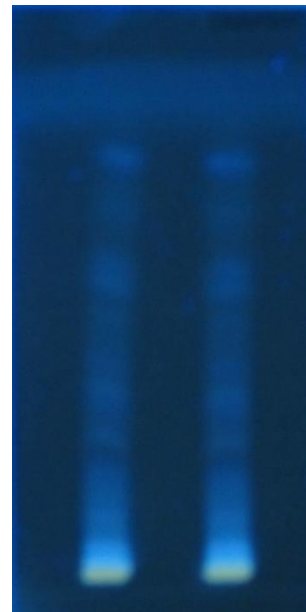
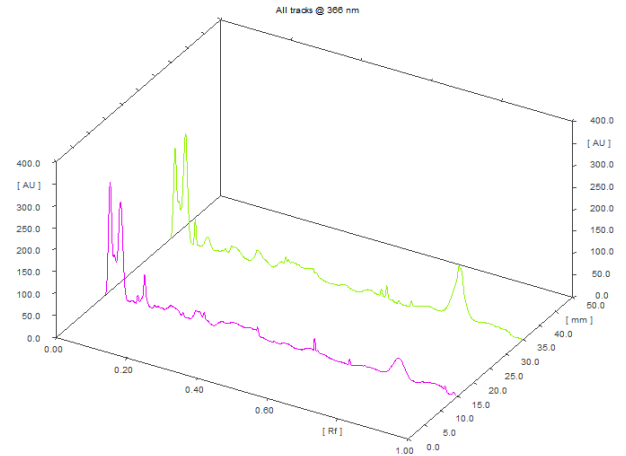
**Table No 4: Details of HPTLC profile of all tracks at 254 nm.**

Spot No	Track-1
1	0.31



**Table No 5: Details of HPTLC profile of all tracks at 366 nm.**

Spot No	Track-1
1	0.23
2	0.31

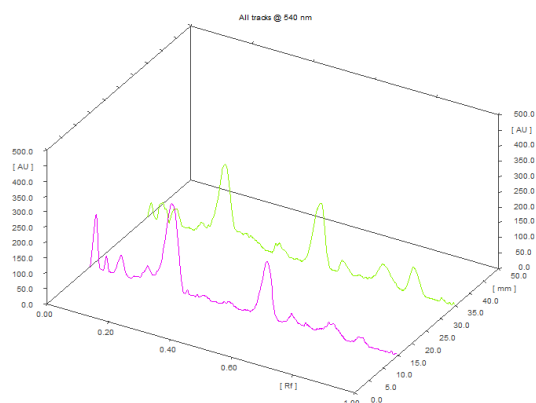


**Table No 5: Details of HPTLC profile of all tracks at 540 nm.**

Spot No	Track-1
1	0.31
2	0.60
3	0.67



4	0.76
5	0.89



### Discussions:

- **Loss on drying:** In this sample loss on drying is 5.87%, it indicates the samples may have good shelf-life and may not decay on storage.
- **Total ash and Acid insoluble ash:** It indicates of contamination, substitution, adulteration. Low total ash and Acid insoluble ash signifies low levels of inorganic matter and silica content. In this sample ash value is 4.64% and Acid insoluble ash is 2.01. It is in normal limit.
- **Water soluble extract and Alcohol soluble extract:** are 82.29% and 37.11% respectively. The high solubility of the sample in water denotes that drug is best suited for extraction with water or water based preparations then alcohol preparation.
- **pH:** The pH was measured to note the acidity or alkalinity of the aqueous solution of the drug. This helps in understanding the pharmacological basis of drug

absorption and metabolism. In this sample pH is 4.49% so it is acidic in nature.

- **Uniformity of weight:** It helps for drug distribution and fixation of drug quantity.
- **Disintegration time:** The uncoated tablet should not have more than 30 min disintegration time. It helps to predicate bioavailability of the drug. This sample's disintegration time is 75min. It indicates it take long time for observation and action of drug on subject.
- **HPTLC:** The  $R_f$  value 0.31 and 0.72 which is obtain may be Carotinoids and Saponosides<sup>ii, iii</sup>.
- Due to the odour of raw *lashuna* ,it is difficult to palate, so *lashuna* tablet form is easy for consumption.
- *Madhura, lavana, katu, tikta, kashaya rasas & guru, snigdha guna* it cures fracture, diseases of bones, diseases of vata
- *Madhura vipaka* is unctuous , heavy, aggravates kapha, anabolic properties which will help in the management of osteoporosis

### Conclusion:

It is an attempt to standardize the formulation of compound. The phyto-chemical tests are under normal limits except Disintegration time it can be used for further pharmacological evaluation for its efficacy and safety. The chromatographic finger printing was developed which could be useful in identification of chemical constituents of



the drug with help of Rf values for the researchers to carry out further research. The probable mode of action of *Lashun Vati* is as *Madhura, lavana, katu, tikta, kashaya rasas & guru, snigdha guna* it cures fracture, diseases of bones, diseases

of vata anabolic properties which will help in the management of osteoporosis. Research work with larger sample for a longer period of time should be carried out to prove its efficacy.

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