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PRELIMINARY STANDARDIZATION OF *ARTHARAKSHA GHANVATI* – A POTENTIAL ANTIHYPERLIPIDEMIC AGENT

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ABSTRACT

Hyperlipidemia is one of the major risk factor for cardiovascular diseases, stroke and peripheral arterial diseases. Hyperlipidemia includes abnormality in LDL cholesterol,HDL cholesterol and triglycerides levels which can be correlated to raised *medas* in body. *Arjuna* ,*Guggulu*, *Garglic*, *Fenugreek* and *Triphala* improves cardiovascular health. *Arthraksha* also improves cardiovascular health. So this compound was analyzed and standardized scientifically through qualitative and quantitative analysis by physico-chemical parameters, Thin Layer Chromatography (TLC) and High performance Thin Layer Chromatography (HPTLC). This will help for the use of this formulation as anti hyperlipidemic agent.

Keywords: *Artharaksha Ghanvati*, *Medoroga*, Antihyperlipidemic agent.

INTRODUCTION: Hyperlipidemia is one of the major risk factor for cardiovascular diseases, stroke and peripheral arterial diseases.[i] According to the National commission on macroeconomics and Health (NCMH), there would be around 62 million patients with coronary artery disease by 2015 and out of these 23 million would be patients younger than 40 year of age[ii] According to WHO overall raised cholesterol leading to 2.6 million deaths which is 4.5% of total population and 29.7million disabilities[iii] Hyperlipidemia leads to Atherosclerosis and which is a major cause for coronary disease. In Ayurveda Hyperlipidemia can be categorized under *Medoroga* or *santarpana jana vyadhi, Kapha (Kledak), Vata (Saman*) and *(vyan) Meda* (fat/lipid) *Medodhatwagni* are involved in the pathogenesis of *Medoroga* . *Artharaksha Ghanvati* breaks this *samprapti*. *Arth*[iv] means heart and *Raksha* means protection, this formulation will help like cardio protector due its antihyperlipidemic quality. This formula is derived from *Bhavprakash Samhita*[v]in *chroona*(powder) *form and Kwath* (Decoction) form of this combination is time-tested and regularly used in patient of hyperlipidemia.*Choorna* and *kwath* form is not user-friendly. This paper tries to establish quality parameters, in a patient friendly- *Ghanvati* form.

AIM AND OBJECTIVES:

Pharmacognostical and phytochemical analysis of *Artharaksha Ghanvati* for antihyperlipidemic.

MATERIAL AND METHOD:

- Collection, identification and authentication of raw drugs
- Preparation of drug at pharmacy
- Phytochemical analysis of compound drug[vi]

Collection, Identification and Authentication of Raw Drugs[vii]:

The raw ingredients were procured from Belgaum, Karnataka. The ingredients and the parts used are given in table No 1. The

raw drugs are indentified and authenticated by the Dept. of *Dravya guna*, Parul Institute of Ayurveda, Parul University, Vadodara. The coarsely powdered drug was used for powder microscopy.

Macroscopic& microscopic characters -Table No 1:

No	Ingredients	Botanical Name	Family	Parts used
1	*Haritaki*	*Terminalia Chebula*	*Combretaceae*	Fruit
2	*Vacha*	*Acorus Calamus*	*Acoraceae*	Rhizome
3	*Rasna*	*Pluchea Lanceolata*	*Compositae*	Root
4	*Pippali*	*Piper Longum*	*Piperceae*	Fruit
5	*Nagar*	*Zingiber Officinale*	*Zingaberaceae*	Rhizome
6	*Shati*	*Hedychium Spicatum*	*Zingiberaceae*	Rhizome
7	*Pushkarmool*	*Inula Racemosa*	*Compositae*	Root

Preparation of the Drug at Pharmacy: The ingredients enlisted from 1-7 are made into coarse powder and is mixed well in equal quantity in mass mixer till a homogenous mixture was obtained. The mixture is converted into *kashaya* and later converted in to *Ghan* as per *Sharangdhar Samhita*[viii]. *Ghan* is kept in hot oven for 3 days till it completely dried. 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: *Artharaksha Ghanvati* was analyzed at Vasu Research Center, Vadodara.

Results:

Organoleptic parameters-Table No 2:

Sr. No	Parameters	Sample
1	Appearance	Compressed tablet
2	Color	Dark brown
3	Taste	Bitter
4	Odor	Characteristic

Phyto - chemical parameters: *Artharaksha Ghanvati* 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, Disintegration time. The results were shown in table No. 3.

Table No 3:

Sr. No.	Parameters	Sample
1	Loss on drying	6.12%
2	Total ash	8.08%
3	Acid insoluble ash	6.14%
4	Water soluble extract	50.40%
5	Alcohol soluble extract	29.46%
6	pH(1% solution)	4.49%
7	Uniformity of weight	0.519 g
8	Friability	100%
9	Hardness	4.6 kg/cm^2
10	Disintegration time	20.11min

High-performance Thin Layer Chromatography study:

Preparation of test solution (T): Accurately weighed 5 g of sample individually in iodine flask and add 20 ml methanol to it. Vortex it for 10 min, heat for 10 min, filtered with Whatman filter paper no.1 and then concentrates it on water bath up to 2 ml. filter again if required and used for HPTL 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 85 ml Methanol AR and 5ml Sulphuric acid 98% GR.

Chromatographic conditions	
Application Mode	CAMAG Linomat5-Applicator
Filtering System	Whatman filter paper No.1
Stationary Phase	MERCK-TLC/HPTLC silica gel 60 F_{254}on Aluminum Sheets
Application (Y axis) start position	10 mm
Development (Y axis) End position	90 mm from plate base
Space between band	10 mm
Sample application volume	8 µL
Development mode	CAMAG TLC Twin Trough Chamber
Chamber Saturation time	30 minutes
Mobile phase (MP)	Toluene: Ethyl acetate: Formic acid(10:3:1)
Visualization	@254nm, @366 and @540(after derivation)
Spray reagent	Anisaldehyde Sulphuric acid reagent
Derivatization mode	CAMAG-Dip tank for about 1minute
Drying mode, temp, & Time	TLC plate heater preheated at 100±5^0 C for 3 minutes
Observation: After derivatization, plate was examined for appearance of different bands at different **R_f**.	

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

Spot No.	**Track -1**
1	0.07
2	0.18
3	0.30
4	0.34
5	0.54
6	0.66
7	0.78
8	0.95

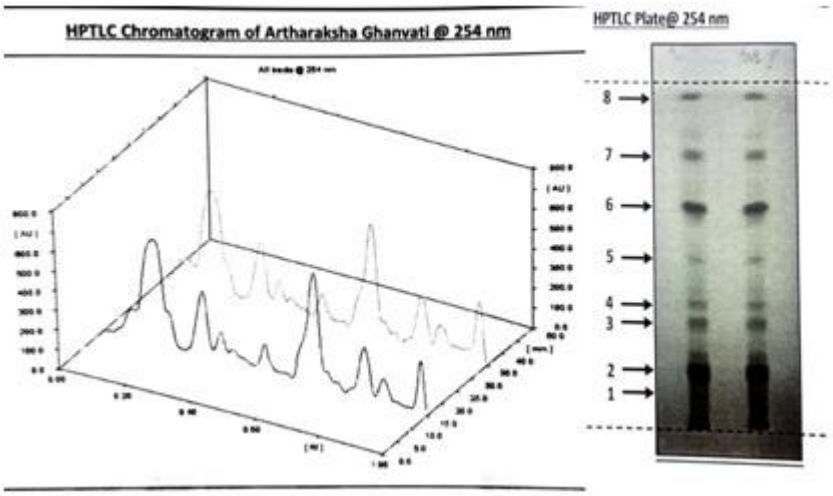


Table No 5: Details of HPTLC profile of all tracks at 366 nm.

Spot No.	Track -1
1	0.07
2	0.18
3	0.30
4	0.46
5	0.61
6	0.74
7	0.78

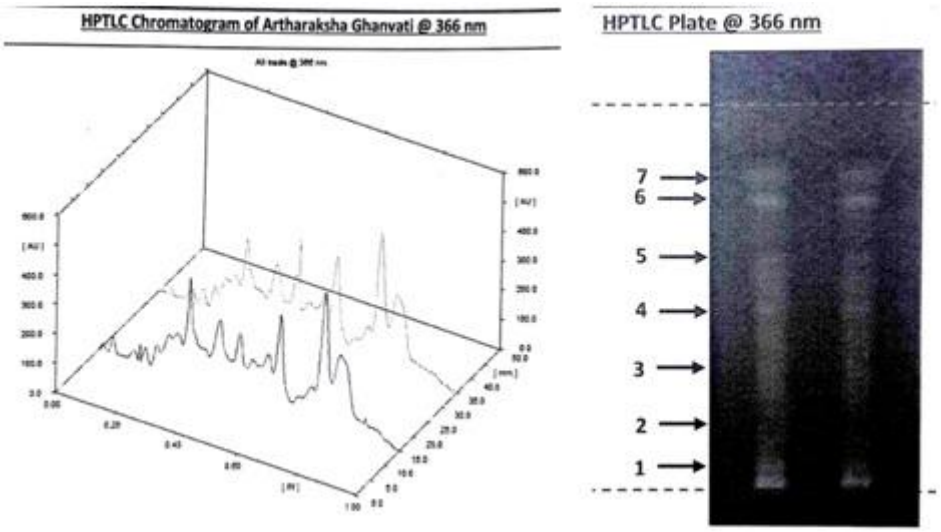
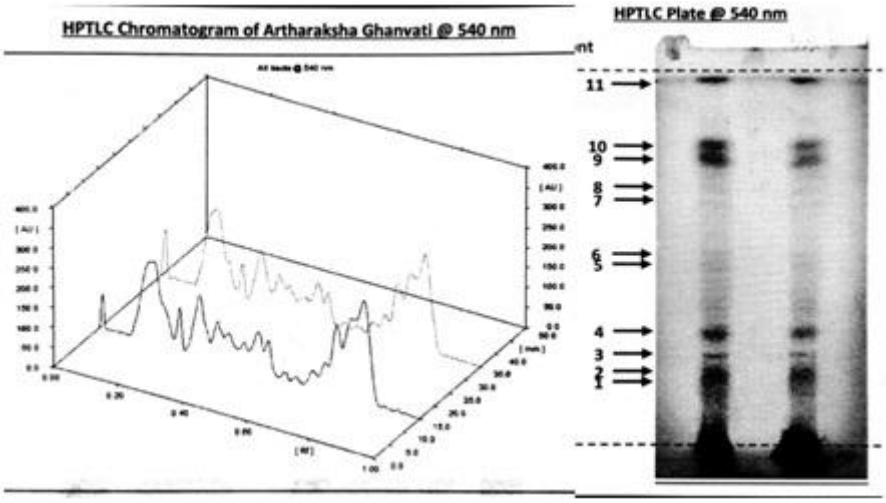


Table No 6 : Details of HPTLC profile of all tracks at 540 nm.

Spot No.	Track -1
1	0.18
2	0.20
3	0.25
4	0.30
5	0.49
6	0.54

7	0.66
8	0.70
9	0.78
10	0.81
11	0.98



HPTLC shows 8 spots @ 254nm, 7 spots @ 366nm and 11 spots @540nm are seen.

DISCUSSION

- Loss on drying: Drying among samples indicating that the samples were devoid of excess water content and no microbial overgrowth or insect infestation was present. In this sample loss on drying is 6.12%, 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 8.08%. In this sample it is slightly more. May be due to presence of fibers and sclereids in the ingredients.
- Water soluble extract and Alcohol soluble extract are 50.40% and 29.46% respectively. The high solubility of the sample in water denotes that drug is best suited for extraction with water or water based preparations. The negligible presence of Volatile oils is also in favor of thermal extractions with water.
- 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 20.11min.
- *Kashaya* form of this is having good result in hyperlipidemic patient, but is not possible to everyone to do it regularly, Ghanvati is easy to take daily.
- *Katu,tikta rasa,ushana veerya, katu vipak,rookshna tikshna laghu guna deepana,pachana, kapha medohara,hrdya lekhana drvyas* can be used to control and

regulate the lipid level in circulation which will help for management of Hyperlipidemia.

- *Artharaksha Ghanvati* encounters *Vata* & *Kapha Dosha* by virtue of its *Katu-Rasa* dominance & *Ushna-Virya*. *Vatahara* action is also achieved by *Laghu* and *Snigdha* property.
- *Katu-Rasa* performs *Medo-Kledopa-Shoshana* action. *Ushna-Virya* also helps in *Kleda* and *Meda Vilayana* action.

CONCLUSION:

Drugs used in the *Artharaksha Ghanvati* are well known for *kaphaja hrudaya roga adhikara*. In choorna form, This formula is modified in Ghanvati form, to overcome the unwieldy situation of kwath prepration and consumption of dry powder, an effort is made to convert it in to convenient tablet form, for patient palatability. It is an attempt to standardize the formulation of compound. The phyto-chemical tests are under normal limits so 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 R_f values for the researchers to carry out further research. The probable mode of action of *Arthraksha Ganvati* is as bile acid sequestrants of its contents *haritki*, *shunti* & *rasana* which are having resin.Research work with larger sample for a longer period of time should be carried out to prove its efficacy.

REFERENCES:

1. Dorland WA. Dorland's Pocket Medical Dictionary [electronic Resource]: International Edition. Saunders; 2009

2 Indrayan A. Forecasting vascular disease cases and associated mortality in India. Burden of disease in India: background papers. 2005:197-218.

3. Noubiap JJ, Nansseu JR, Bigna JJ, Jingi AM, Kengne AP. Prevalence and incidence of dyslipidaemia among adults in Africa: a systematic review and meta-analysis protocol. BMJ open. 2015 Mar 1;5(3):e007404.

4. Agnivesha,Charak Samhita, Chakarpanidatta Teeka, Acharya Yadmji Trikamji,4th Ed, Varansi Choukhambha Sanskrit Samsthan, 2015 p 183

5. Bhavamishra,Bhavaprakasha Madhyama Khanda, Hrudaya adhikara verse-12,Hindi commentary by Bhramha shankara Misra 12 th ed.Varavasi(UP);Chaukhambha Sanskrit bhavan 2016 p 359

6 Anonymous, (1999),Ayurvedic Pharmacopoenia of India, Ministry of Health and Family Weifare,Govt of India,Department of ISM&H,Part-1

7. Kokate CKPurohit AP,Gokhale SB,Pharmacology,42nd ED,Pune,Nirali Prakashan,2008,Chapter 6,6.1-45

8. Pandit Sarnadharacarya,Saragadhara – samhita Madhyam Kanda , kwathadi kalpana by Bramhanda Tripati,Varanasi Chaukhambha surbharti Prakashan2016p 90

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