

CLINICAL EVALUATION OF THE EFFECT OF K Aidarya IN HYPERTENSION

Sethu R¹, Sreedevi Joshi², Anu S³

¹Final Year PG Scholar, Dept of Dravyaguna, Alva's Ayurveda Medical College, Moodbidri, 574227, Karnataka, India

²Professor, Dept of Dravyaguna, Yenepoya Ayurveda Medical College, Karnataka, India

³final year PG Scholar, Dept of Panchakarma, Alva's Ayurveda Medical College, Karnataka, India

Email: forever.lords.feet@gmail.com

ABSTRACT

In *Ayurvedic* medical science medicinal plants are considered as the base for treating illness. Hypertension (HTN or HT) is a very common medical lifestyle disorder that affects more than half of the world's population irrespective of any criteria. To use the natural resources without exploiting and thereby benefiting mankind, we have to understand the nature. By understanding the nature and the way nature works, better results can be obtained as it helps to maintain a balanced state in ecology. Once the connection and relationship between nature and mankind is understood and respected well, the possibility of enjoying the natural resources for a longer period of time without depletion is possible. Modern medicine offers a vast number of medicines in treating and controlling hypertension which requires lifelong intake of medications and the need for herbal products has increased globally, but due to the commercialization of drug industry, many herbs have become extinct and many are on the verge of extinction. So, the selection of drugs that are most commonly available and economical and effective in a given condition should be encouraged. The objective of the study is to evaluate the clinical efficacy of *Kaidarya* (*Murraya koengii Linn.*) in hypertension. In Clinical study 30 patients of either sex who fulfil the inclusion criteria is taken and the effect of the drug *Kaidarya* will be assessed for a total of 15 days. Follow-up will be done 15 days after the treatment period. The statistical data before and after treatment were analyzed and compared.

Keywords: *Kaidarya*, Hypertension, *Kalka*, *Murraya koengii Linn.*

INTRODUCTION

Nature mainly houses itself to 2 main kingdoms namely, Animal kingdom and Plant kingdom. The plant kingdom has been the root source of all medication in all the traditional healing practices all over the world. Such traditional healing systems help us to understand and learn the intimate relationship that existed between man and nature. This relationship forms the base for the development of the science called

Ethno Botany. Origin of all traditional medicinal systems that exists must have their roots in ethno botanical folklore which paves way and motivates researchers to study on a large number of ethno medicinal species which are not yet explored. In Ayurvedic system of medicine plants have been the basis for medical treatments through much of human history, and such traditional medicine is still widely practiced today

while some people may dismiss herbal remedies as quackery, the use of plant is well rooted in medical practice. While exploring through the ancient texts, it's evident that *Acharyas* stressed the importance in understanding, utilizing the knowledge and experience in drug identification of the cowherds, hermits, hunters, forest dwellers, in order to find newer drugs for the health care of mankind.¹

Practitioners from ancient periods methodically collected information about herbs and developed well-defined pharmacopoeias to treat a variety of ailments². According to World Health Organization (WHO), more than 80% of the world's population depends on traditional herbal medicine for their primary health-care needs (Inglis 1994)³. At the same time, we face issues of rapid depletion of natural resources due to deforestation, excessive use for commercial purposes and increased demand for herbal medicines. So there arises the need for development of plant-based drugs through research and investigation through traditional medicine of medicine. The drug *Kaidarya* (*Murraya koengii Linn.*) is a small sized tree of the Rutaceae family found all over India. Decoction of the leaves is given with bitters as a febrifuge in fevers and also used in snake bite⁴. Leaves are popularly used for flavouring curries and condiments.⁵

Hypertension (HTN or HT), also known as high blood pressure (HBP), is a long-term medical condition in which the blood pressure in the arteries is persistently elevated.⁶ Long-term high blood pressure, however, is a major risk factor for coronary artery disease, stroke, heart failure, atrial fibrillation, peripheral vascular disease, vision loss, chronic kidney disease, and dementia.

Methods

The Botanically identified samples of *Kaidarya* (*Murraya koengii Linn.*) Leaf from Moodbidri, Karnataka was subjected to both macroscopic and microscopic evaluation. The air-dried leaves of *Kaidarya* (*Murraya koengii Linn.*) powdered finely and sub-

jected to various analyses, such as determination of moisture content, ash value, acid insoluble ash, water soluble ash etc.

Along with the physiochemical study of the drug, preliminary phytochemical study of the drug was also carried out to test the presence of proteins carbohydrates, tannins, flavonoid etc.

Clinical study was carried out in patients suffering from the condition Hypertension. For this the patients were collected from the OPD of Alva's Ayurveda Medical College hospital, Moodbidri.

Inclusion criteria

- Both males and females of age group (30-50).
- Blood pressure in the range (130-150)-systole and (90-100)-diastole will be taken for the study
- Only patients who will commit to the study willingly by signing the consent form will be included.

Exclusion criteria

- Patients above 50 yrs as there are a lot of associated problems in the patient.
- Patients suffering from known cases of HIV, Tuberculosis, Malignancy, Diabetes, Hypo thyroidism and Nephrotic syndrome are excluded
- Patients who are taking medicines for other conditions which will interfere with the study will also be excluded.

Subjective criteria mainly include the symptoms which will be helpful in assessing and diagnosing the patients like headache, giddiness, fatigue, irritability.

Objective criteria mainly include sphygmomanometer and other diagnostic tools involved in the diagnosis of the condition of the patient.

- Criteria for assessment include examination of the blood pressure before and after the medication.
- Objective parameters of pre-and post-medication of 30 patients are to be analysed statistically

The study type was single arm Experimental and the research design is comparison between pre-test and post-test.

Table 1: Treatment schedule

Particulars	Details
Sample size	30
Drug	<i>Kaidarya (Murraya koengii Linn.)</i>
Form of medication	<i>Kalka</i>
Dose	10gm (thrice a day)
Duration of study	30 days

Statistical Analysis of the Result

The information gathered on the basis of above observations was subjected to statistical analysis using SPSS VER.20. Arithmetic mean (AM), standard deviation (SD), mean difference (MD), frequencies and percentages were used for summarizing the collected

data. **Paired t-test** was done for analysing the before–after effect of therapy and the different time of significant changes since all were Objective parameters.

The results having p value <0.05 is considered as statistically significant in this study.

Result

Table 2: Physico-chemical analysis of powder of *Kaidarya*

Sl. No	Experiments	Percentage
1.	Foreign matter	Nil
2.	Loss on drying	8.5%
3.	Total ash	12.02%
4.	Acid Insoluble Ash	1.712%
5.	Water soluble Ash	4.57%
6.	pH	5.63

Table 3: Determination of Extractive values

The Extractive Values in Different Solvents	Percentage of Extract of <i>Kaidarya</i> [<i>Murraya koenigii Linn.</i>]
Water	35.44%
Ethanol	7.88 %
Methanol	18.46%
Chloroform	3.20 %
Petroleum Ether	2.20%
Acetone	2.20 %

Table 4: Ash analysis

Results of Ash analysis components	<i>Kaidarya</i> [<i>Murraya koenigii Linn.</i>]
Carbonates	Absent
Fluorides	Absent
Chlorides	Presence
Sulphates	Absent
Chromates	Absent
Phosphates	Absent
Potassium	Absent
Sodium	Absent
Aluminium	Absent
Calcium	Absent

For the assessment of effect of treatment, systole and diastole reading are considered. The effect of the trial drug in systole and diastole reading on 3rd, 6th, 9th,

12th and 15th day of treatment were computed. Finally, the overall effect of the treatment was computed.

Table 5: EFFECT OF DRUG IN SIGNS AND SYMPTOMS ON 3rd DAY

There is no statistically significant change in Systole and statistically significant change in Diastole

Signs and Symptoms	Mean				%	“t” Value	“p” Value
	BT	AT	SD	SE			
Systole	141.733	141.2	1.479	0.270	0.38	1.975	>0.05
Diastole	94.73333	94.3333	0.968	0.177	0.42	2.262	0.03

Table 6: EFFECT OF TRIAL DRUG IN SIGNS AND SYMPTOMS ON 6TH DAY

There is no statistically significant change in all the signs and symptoms which is evident

Signs and Symptoms	Mean				%	“t” Value	“p” Value
	BT	AT	SD	SE			
Systole	141.733	141.267	1.717	0.313	0.38	1.975	>0.05
Diastole	94.73333	94.3333	1.102	0.201	0.42	1.989	>0.05

Table 7: EFFECT OF DRUG IN SIGNS AND SYMPTOMS ON 9TH DAY

There is no statistically significant change in Systole and statistically significant change in Diastole

Signs and Symptoms	Mean				%	“t” Value	“p” Value
	BT	AT	SD	SE			
Systole	141.733	141	1.998	0.365	0.52	2.009	>0.05
Diastole	94.73333	94.2	1.279	0.234	0.56	2.283	<0.03

Table 8: EFFECT OF DRUG IN SIGNS AND SYMPTOMS ON 12TH DAY

There is a statistically significant change in all the signs and symptoms. All the signs and symptoms have P<0.05

Signs and Symptoms	Mean				%	“t” Value	“p” Value
	BT	AT	SD	SE			
Systole	141.733	140.6	2.270	0.414	0.80	2.734	<0.01
Diastole	94.73333	94	1.529	0.279	0.77	2.625	0.03

Table 9: EFFECT OF DRUG IN SIGNS AND SYMPTOMS ON 15TH DAY

There is a statistically significant change in all the signs and symptoms. All the signs and symptoms have P = <0.05, table no: 10

Signs and Symptoms	Mean				%	“t” Value	“p” Value
	BT	AT	SD	SE			
Systole	141.733	140.2	2.713	0.495	1.08	3.096	<0.01
Diastole	94.73333	93.8	1.638	0.299	0.985	3.120	<0.01

DISCUSSION

The complete literature study reveals that the drug *Kaidarya* (*Murraya koenigii* Linn.) is broadly seen in the *Brihatrayis* and various *Nighantus* such as *Sadrassa Nighantu*, *Raja Nighantu*, *Kaiyyadeva Nighantu*, *Bha-*

vaprakasha Nighantu, *Saligrama Nighantu* and other contemporary texts like API, Indian Medicinal Plants etc. The *Nighantus* has quoted the drug as a variety of *Nimba*. The drug *Kaidarya* is not found to be mentioned in *dhanwantari Nighantu* and *shodhala*

Nighantu. In *Brihatrayi* various references about the term 'Kaidarya' is available and possesses *Kashaya-tikta-Madhura rasa* and *Kapha-Pittahara* in action, main *Karmas* of *Kaidarya* include its *Deepana, Paachana and Rochana karma*. The study was conducted in 30 hypertensive patients with blood pressure ranged between in the range (130-150)-systole and (90-100)-diastole, selected as per the exclusion and inclusion criteria. *Kaidarya kalka* (10gms) was given to the patients thrice daily before food for 15 days and follow up was done on the 30th day. The data collected before and after trial were consolidated and statistically analysed using Paired "t" test for objective criteria alone. The effect of the trial drug in systole and diastole reading on 3rd, 6th, 9th, 12th and 15th day of treatment were computed. No statistically significant change was observed on 6th day, and 9th day on systole while statistically significant change was observed in Diastole on the 9th day with "p" value = <0.03. On 12th day and 15th day, statistically significant changes were observed in all the signs and symptoms with p< 0.05 on 12th day and p<0.01 on the 15th day. *Acharya Charaka* opines that certain drugs act through *Rasa*, some through *Virya*, some through their *Gunas*, some through their *Vipaka* and some through their *Prabhava*⁷. At the same time *Laghu* and *Ruksha Guna* increase the *Vata* and therefore vessels are dilated and pressure become low⁸. The effect of the drug may occur by suppressing the centre in brain controlling the diameter of blood vessels – like sedative and tranquilizers - Acting on arterial wall muscles - Reducing the hydrostatic pressure of Plasma – like blood donation, leech application, using diuretic drugs etc.

Most of these drugs are acting by *vasodilation* so they are called vasodilators

Kaidarya is endowed with the properties like *Tikta, katu, kashaya rasas, laghu, ruksha, gunas, seeta veerya* and *katu vipaka*. Impairment of *Vata dosha* and *Pitta dosha*, *Impairment of jatharagni* and *ama* is the fore most cause in *samprapti* (pathogenesis) of *Hypertension*. *Pitta dosha* impairment basically leads to the vitiation of *Rakta dhatu* by the *Ashraya-Ashrayi bhava* of *Pitta* and *Rakta*. *Agni deepana* property helps to recover the vitiated *jatharagni* and *dhathavagni*,

leading to proper *dhatuparinama kriya*. As a result of which proper formation of *dhatu*s is facilitated due to its *Tikta Rasa* it has *Kapha Pitta Shamaka, Meda Kleda Shoshan* and *Rakta Vikara* property. Therefore, it reduces the *Ushana Guna* of blood. Also, *katu rasa* is having the property of *kleda meda vishoshana* and *kapha samana*. Constriction in *srotas* is relieved through *laghu and ruksha guna* causes dilation of the blood vessels thereby reduces the blood pressure. By analyzing the many researches carried out till date, it has been established that *Kaidarya* contains alkaloids in varying concentrations which has anti –hypertensive property. *Kaidarya* also showed the presence of anti-oxidants. The utility of anti-oxidants in many diseases are well organized. Cellular damage arising from an imbalance between free radical generating and scavenging systems has been implicated in the pathogenesis of a wide variety of disorders⁹. According to *Davies*¹⁰ the oxidative damage is a very important effect of the free radicals which can lead to the damage of cellular constituents; their repair depends on the presence of anti-oxidants. *Kaidarya* also showed the presence of tannins which are natural polyphenols, able to precipitate water soluble alkaloids and possess an inhibitory action on the angiotensin converter enzyme (ACE) which plays an important role in the conversion of Angiotensin I to Angiotensin II in the Renin Angiotensin Aldosterone system which helps in maintaining blood pressure¹¹. Flavonoids are found to exert beneficial effects on cardiovascular disease especially hypertension. They were able to modulate hypertension by restoring endothelial function either directly by affecting nitric oxide levels or indirectly by other pathways. The saponin and flavonoid content of the test drug is also helpful in enhancement of antioxidant property¹².

CONCLUSION

Microscopic study of *Murraya koenigii Linn.* revealed that the sample taken for the study was genuine. The preliminary phytochemical screening of leaf powder of *Kaidarya (Murraya koenigii Linn.)* with the various chemical tests (qualitative) revealed the presence of different chemical constituents in ethanolic and aqueous extract like alkaloids, flavanoids, saponin, carbo-

hydrate, phenol and tannin which reveals quality of the study sample. Based on the clinical study, *Kaidarya* can be chosen as a single drug of choice for treating hypertension.

No adverse effect was observed during the clinical study.

REFERENCES

1. Agnivesha Maharshi, Charaka Samhita sutrasthana with commentary by Gangadhara and Ayurveda Deepika of Chakrapanidutta edited by Y.T.Acharya, published by Chaukambha Prakashan, Varanasi, Edition reprint 2001,(1/120-123).
2. <http://en.wikipedia.org/wiki/Herbalism>
3. P.C.Trivedi, Ethnomedicinal plants of India pno2
4. R.N.Chopra, S.L.Nayar, I.C.Chopra; Gloosary of Indian Medicinal Plants, New Delhi, NISCAIR Press, National Institute Of Science Communication and Information Resources, First Edition 1956; page 171
5. A.K.Nadkarni, Dr.K.M.Nadkarni's Indian Materia Medica,New delhi, Chaukhambha Publications, Volume 1; page no 195
6. Naish, Jeannette; Court, Denise Syndercombe (2014). Medical sciences (2 ed.). p. 562.
7. ISBN 9780702052491. Archived from the original on 26 December 2016.
8. Charaka Samhita, Sutrasthana, Chapter 26, sloka 71.
9. Rajasekhara Sanapeti, Clinical study on the effect of takradhara in essential hypertension.
10. Wan J, Wen L, Huang Chen Y and Ku M, Curr Pharm Des 2006, 12(27) 3521/33
11. Davies K J, An Oxidative damage and Repair: Chemical, biological and medical aspects, Pregamol, Oxford 1991
12. Liu JC, et al. Antihypertensive effects of tannins isolated from traditional Chinese herbs as non-specific inhibitors of angiotensin converting enzyme, Life sci.2003 Aug 8;73(12):1543-55.

Source of Support: Nil

Conflict Of Interest: None Declared

How to cite this URL: Sethu R et al: Clinical Evaluation of the Effect of Kaidarya in Hypertension. International Ayurvedic Medical Journal {online} 2019 {cited May, 2019} Available from:

http://www.iamj.in/posts/images/upload/690_695.pdf