



Carib.J.Sci.Tech

## REVIEW ON POSSIBILITIES OF PATOLADI GAN KASHAYAM AS AN ADJUVANT THERAPY TO COMBAT ADVERSE EFFECTS OF CHEMOTHERAPY/RADIOTHERAPY & CANCER

### Authors & Affiliation:

**Dr. Roshani Verma<sup>1</sup>, Dr. Kirti Kumar Akhand<sup>2</sup>**

1.P.G. Scholar, Dept. of Swasthivritta, Pt. Khushilal Sharma Government Ayurveda College, Bhopal, Madhya Pradesh.

2.P.G. Scholar, Dept. of Shalaky Tantra, National Institute of Ayurveda, Jaipur, Rajasthan.

Correspondence To:

**Dr. Roshani Verma,**

M.D. (Ay.) – I, Dept. of Swasthivritta, Pt. Khushilal Sharma Govt. Auto. Ayurveda College, Bhopal, Madhya Pradesh, India.

### Keywords:

Cancer, *Granthi*, *Arbuda*, *Patoladi Gan Kashayam*

### ABSTRACT

Cancer is a mass of tissue formed as a result of abnormal, excessive, uncoordinated, autonomous & purposeless proliferation of cells even after cessation of stimulus for growth which caused it. Chemotherapy, Radiotherapy or the cancer itself may cause changes in the body chemistry that results in anorexia, loss of appetite, pain, hepatotoxicity, mucositis, phlebitis, alopecia, skin rashes, burning sensation & very common nausea, vomiting & immunosuppressant.

World Health Organization, Lyon/Geneva 12 Dec.2013 declared, global burden rises to 14.1 million new cases & 8.2 million cancer deaths in 2012. In India, 8,00,000 new cancer patients get registered with the National Cancer Registry Programme in 2013, cancer related deaths found in India 5,56,400 in the year 2010.

In Ayurvedic classics, like *Charaka Samhita* & *Sushruta Samhita* etc. described cancer as inflammatory or non-inflammatory swelling & mention them as either *Granthi* (minor neoplasm) or *Arbuda* (major neoplasm). A lot of research papers have been published related with many ayurvedic herbs and the group of herbs showed significant results in this field.

Therefore, this review article has been planned to know possibilities to minimize nausea, vomiting etc. with *Patoladi Gan Kashayam*; And with the help of this article other herbs can also be in light for research area. All the literatures related to *Arbuda* which find place in classics explored including the texts like *Charaka Samhita*, *Sushruta Samhita*, *Vagbhatta Samhita* and the *Laghutrayi*. At the same time the Modern literature including recent advances in the field were also be reviewed.

© 2015. The Authors.

Published under **Caribbean Journal of Science and Technology**

ISSN 0799-3757

<http://caribjscitech.com/>

## 1. INTRODUCTION:

Cancer is a mass of tissue formed as a result of abnormal, excessive, uncoordinated, autonomous & purposeless proliferation of cells even after cessation of stimulus for growth which caused it.<sup>(1)</sup>

Chemotherapy, Radiotherapy or the cancer itself may cause changes in the body chemistry that results in anorexia, loss of appetite, pain, hepatotoxicity, mucositis, phlebitis, alopecia, skin rashes, burning sensation & very common nausea, vomiting & immunosuppressant. These symptoms makes eating & digestion difficult, so an undesirable loss of weight due to insufficient amount of calories every day can lead to loss of muscle mass & strength & other complications by causing interruptions of Chemotherapy/Radiotherapy, impending effective cancer therapy.

World Health Organization, Lyon/Geneva 12 Dec.2013 declared, global burden rises to 14.1 million new cases & 8.2 million cancer deaths in 2012. Most commonly diagnosed cancer worldwide are, Lung cancer ( 1.8 million, 13.0% of the total cancer ), Breast cancer ( 1.7 million, 11.9% of the total cancer ), Colorectal cancer ( 1.4 million, 9.7% of the total cancer) & most common causes of cancer deaths were Lung cancer ( 1.8 million, 13.0% of the total cancer), Liver cancer ( 0.8 million, 9.1% of the total cancer), Stomach cancer ( 0.7 million, 8.8% of the total cancer)<sup>(2)</sup>

In India, 8,00,000 new cancer patients get registered with the National Cancer Registry Programme in 2013, cancer related deaths found in India 5,56,400 in the year 2010. 71% of cancer patients ( 3,95,400 ) were of the age group b/w 30-69 years. Common types of cancer in India are Oral cancer (each year 75,000-80,000 new cases are added in the list), Cancer of head & neck ( 86% of total in the world), Stomach cancer ( In 2010, 12.6% deaths are reported), Uterine & cervical cancer (20-25 out of 1,00,000 females have cervical cancer)<sup>(3)</sup>

National Cancer Registry Programme of Indian Council of Medical Research (ICMR) estimated cancer cases among females in India increased by 2.9%, while during the same period the increase was 3.8% in Madhya Pradesh, only behind Andhra Pradesh, Bihar and Chhattisgarh amongst the bigger states <sup>(4)</sup>. Bangalore city is found as Cancer capital of India, while Bhopal city has reported as 2<sup>nd</sup> highest incidences of mouth cancers in the country<sup>(5)</sup>.

Cancer cases come forward because of consumption of tobacco, alcohol, smoking, unhealthy lifestyle, Poor immunity, lack of awareness & lack of proper nutrition <sup>(6)</sup>.

In Ayurvedic classics, like *Charaka Samhita* & *Sushruta Samhita* etc. described cancer as inflammatory or non-inflammatory swelling & mention them as either *Granthi* (minor neoplasm) or *Arbuda* (major neoplasm). Malignant tumors (*Tridoshaja/Sannipataja*) are very harmful because all the three *Doshas* lose mutual coordination & thus cannot prevent tissue damage and resulting in a deadly morbid condition <sup>(7,8)</sup>.

Herbs can balance the *Tridoshas* & *Sapta Dhatus* and improve *Ojas*, which are consider to become in imbalance state due to cancer & due to adverse effects of cancer therapies. Ayurvedic herbs & formulations are reported to work on multiple biochemical pathways and are capable of influencing several organ systems simultaneously. Herbs of *Patoladi Gan Kashayam* are scientifically proven anti-cancerous, immunomodulatory, antioxidant, hepatoprotective, antipyretic etc.<sup>(9-17)</sup>. Thus Ayurveda can be helpful in the management of cancer in many ways, as prophylactic, palliative, curative and supportive and undoubtedly it helps to improve the "Quality of Life" as an adjuvant therapy along with cancer therapies. Although the adverse effects of Chemotherapy/Radiotherapy cannot be totally avoided, but it is believed widely that in Ayurveda there are ways to minimize the side effects of these therapies. Therefore, a review article has been planned to minimize nausea, vomiting, immunosuppressant action, hepatotoxicity, anorexia etc. with *Patoladi Gan Kashayam*.

## IN CLASSICAL TEXTS:

In all classical texts *Arbuda/Granthi* find place as a separate disease.

In *Charaka Samhita*, described it as *Granthi Roga* in chapter (*Ch-chi. 12*).

In *Sushruta Samhita*, described it as *Arbuda* in chapter (*Su-ni.11 & Su-chi. 18*)

In *Chakradatta*, described it as *Arbuda* in chapter 41.

In *Sharangadhar Samhita*, described it as *Granthi & Arbuda* in chapter (*Sha. purva khanda-7*).

In *Bhavaprakash Samhita*, described it as *Arbuda* in chapter (*Dwitiya khanda- 44*)

Ayurveda has mainly 2 aims; promotion of health & protection from diseases. For that, in ayurveda various rules & regimens like *Dincharya* (Daily regimen), *Ratricharya*, *Ritucharya*, *Pathyapathya* foods (Balanced food) and physical exercises are described. Ayurveda has concept of *Shodhan dravyas*, which eliminates *Visha* (various types of toxins & features like toxicity) from the body. In classics, *Patoladi Gan Kashayam* described as a group of herbs, which are *Vishapaha*<sup>(18,19)</sup> and can minimize the adverse effects of Chemotherapy/Radiotherapy. So, along with conventional modern therapies it can prevent the progression of disease, can work as immunomodulator and will make the patients feel better and comfortable with overcoming symptoms.

### HERBS OF KASHAYAM:

The proposed drug compound “*Patoladi Gan Kashayam*” contains total 6 herbs, these are:

HERBS	BOTANICAL NAME	FAMILY
PATOL	<i>Tricosanthes dioica</i>	<i>cucurbitaceae</i>
GUDUCHI	<i>Tinospora cordifolia</i>	<i>menispermaceae</i>
PATHA	<i>Cissampelos pareira</i>	<i>menispermaceae</i>
CHANDAN	<i>Santalun album</i>	<i>santalaceae</i>
KUTKI	<i>Picrorhiza kurroa</i>	<i>scrophularaceae</i>
MURVA	<i>Marsdenia tenacissima</i>	<i>asclepiadaceae</i>

These herbs should be taken in equal quantity in the form of *Kashayam*.

### DESCRIPTION OF HERBS:

#### PATOL:

*Patol* is an annual or perennial herb distributed in Asia, Polynesia and Australia. Pointed gourd (*Tricosanthes dioica*) is known by the name of *parwal*, *palwal*, *potala* in different parts of India and Bangladesh and is one of the important vegetables of this region.

Constituents: a number of tetra and pentacyclic triterpenes, cucurbitacin B, vitamin A, vitamin C, tannins and saponin.

Therapeutic uses: Antidiabetic, Hepatoprotective, Cholesterol lowering activity, Anti-inflammatory, Antifungal, Antibacterial, Antioxidant, Wound healing.<sup>(25)</sup>

**GUDUCHI:**

It consists of dried, matured pieces of stem of *Tinospora cordifolia* (Willd.), a perennial climber found throughout Tropical India, drug collected during summer preferably in the month of May, drug is used in fresh form also.

Constituents: Terpenoids and alkaloids.

Therapeutic uses: *Jwar, Kushtha, Pandu, Prameha, Vatarakta, Kamala.*<sup>(22)</sup>

**PATHA:**

Patha consists of roots of *Cissampelos pareira* Linn., an extensively spreading, glabrous to softly pubescent, perennial climbing shrub with nodose stem, common in warm and dry regions of sub-tropical parts of India upto an altitude of about 1500 m.

Constituents: Alkaloids, saponin and quaternary ammonium bases, flavonol and sterol.

Therapeutic uses: *Sularoga, Atisara, Chhardi, Jvara, Kandru, Kushtha, Stanyadushti.*<sup>(22)</sup>

**CHANDAN:**

*Santalum album* is a native of the highlands of southern India mainly Coorg, Chennai and Mysore. It generally occurs at altitudes of 2000-3000 feet. The tree attains the height of 60-65 feet. The bark and sapwood are odourless and the roots and heartwood contains the essential oil.

Constituents: alpha-santalol, beta-santalol

Therapeutic uses: Insect growth inhibitor, Antibacterial, Antiviral, Antifungal, Sedative effect, Diuretic, Expectorant, Stimulant.<sup>(15)</sup>

**KUTAKI:**

*Kutaki or katuka* consists of the dried rhizome with root of *Picrorrhiza kurroa* Royle ex Benth., a perennial, more or less hairy herb common on the north western Himalayas from Kashmir to Sikkim. Rhizome is cut into small pieces.

Constituents: Glucoside (Picrorhizin).

Therapeutic uses: *Svasa, Daha, Jvara, Kamala, Kustha, Visamajvara, Arocaka.*<sup>(22)</sup>

**MURVA:**

Murva consists of dried root of *Marsdenia tenacissima* Wight., a large stout, twining shrub, growing throughout the country.

Constituents: Resin

Therapeutic uses: *Arsa, Hrdroga, Jvara, Krmiroga, Kandru, Medoroga, Meha, Raktapitta, Mukha sosa, Trsna.*<sup>(22)</sup>

**REVIEW OF RESEARCHES:**

1. Suwit Duangmano, Sumana Dakeng, Weena Jiratchariyakul, Apichart Suksamrarn, Duncan R. Smith and Pimpicha Patmasiriwat, in the year 2010 reported anticancer bioactivities of cucurbitacin B are revealed by telomerase via down regulation of both hTERT and c-Myc expression in breast cancer cells.<sup>(9)</sup>

2. Rahul Verma, Hotam Singh Chaudhary, R.C.Agrawal, in the year 2011 reported C57BL mice which received *Tinospora cordifolia* extract at the dose of 750mg/kg for 30 days showed increase in lifespan of animals and tumor size was significantly reduced in *T. cordifolia* treated mice as compared to control group.<sup>(10)</sup>
3. Som Dutt, Guy Kiddle, Bikram Singh, Bhupinder Khambay and Christine H. Foyer, reported rhizomes and roots of *Picrorhiza kurroa* have anticancer activity and antioxidant status of *P. Kurroa* tissues through development.<sup>(11)</sup>
4. S. Surendram, M. Bavani Eswaran, M. Vijayakumar & Ch V Rao, in the year 2010 reported a significant increase was absorbed in AST, ALT, ALP and serum bilirubin levels after exposed to CCL4. However administration of CPRE at different dose levels (100, 200 and 400mg/kg) recovered significantly the increased liver marker enzyme levels, and alkaline phosphatase. It indicated the stabilization of plasma membranes and repair of hepatic tissue.<sup>(12)</sup>
5. Zhengrong Huang, Hao Lin, Yong Wan, Zhiyun Cao, Wei Lin, Qiang Chen, in the year 2013 reported HUVEC viability was determined following treatment with various concentrations of *Marsdenia tenacissima* extract for 24 hours. Treatment with 2.5 to 7.5 mg/ml of MTE for 24 hours dose dependently reduced the cell viability from 56 to 17%, when compared with the control cells (P<0.01).
6. Anand Bafna, Shrihari Mishra, in the year 2009 reported AFCP showed moderate inhibition of lipid peroxidation induced by Iron/ADP/Ascorbate complex in rat liver damage.<sup>(13)</sup>
7. K.K. Hulatti, M.S. Sharada, in the year 2007 reported the methanolic extract of *Cissampelos pareira* at a dose of 200 mg/kg body weight has shown significant (P<0.001) antipyretic activity, it has shown significant fall in body temperature upto 4<sup>th</sup> following its administration.<sup>(14)</sup>
8. Rakesh K. Sindhu<sup>1</sup>, Upma, Ashok kumar, Sahil Arora, in the year 2010 reported alpha santalol at the concentrations of 25-75 10<sup>-6</sup>ml. resulted in a concentration and a time dependent decrease in a cell number, which was largely due to cell death.<sup>(15)</sup>
9. Biswapriya B. Misra, Satyahari Dey, in the year 2013 reported alpha-santalol was shown to delay skin cancer development, reduced tumor multiplicity, *in vitro* lipid peroxidation in skin and liver microsomes and hence prevented UVB-induced skin tumor development possibly by acting as an antiperoxidant (Bommareddy et al., 2007).<sup>(16)</sup>
10. Jamal Akhtar Ansari, Homa Jilani Khan, Nishat Fatima, Vijai Lakshmi, Mohammad Kaleem Ahmed, Abdul Rahman Khan, Abbas Ali Mahdi, reported some anticancerous medicinal plants.<sup>(17)</sup>
11. Debabrata Das, S. K. Agrawal and H. M. Chandola, in the year 2011 reported the intensity of radiation and to a extent by *Yashtimadhu Ghritha* greatChemotherapy induced mucositis was reduced in Head and neck malignancies.<sup>(23)</sup>
12. Purvi Vyas, in the year 2005 reported significant role of *Guduchyadi Rasayan* as a Radioprotective and Chemoprotective in the management of Carcinoma.<sup>(24)</sup>

## RESULT:

These mentioned researches have showed significance of herbs of *Patoladi Gan Kashayam* individually, proposed combination of this group can show significant results also. Herbs of *Patoladi Gan Kashayam* are scientifically proven anti-cancerous, immunomodulatory, antioxidant, hepato-protective, antipyretic etc. So, combination of these herbs as a form of *Kashayam* should be the topic of dissertation. Research is required in this field.

## DISCUSSION:

Ayurveda can be helpful in the management of cancer in many ways, as prophylactic, palliative, curative and supportive and undoubtedly it helps to improve the "Quality of Life"<sup>(20)</sup> as an adjuvant therapy also with modern therapies. Ayurveda would be safe, natural, cost effective management and can help to improve "Quality of Life" and

at the same time this review article would also be able to change the old concepts and promote use of Ayurveda & Modern conventional medicines together to overcome diseases with minimum adverse effects.

#### CONCLUSION:

This review article will be helpful to find the possibilities to minimize nausea, vomiting, immunosuppressant action, hepatotoxicity, anorexia etc. with Patoladi Gan Kashayam; And with the help of this article other herbs and combination of herbs can also be in light for research area.

#### REFERENCES:

1. Mohan Harsh, Harsh Mohan's Textbook of Pathology, foreword Ivan Damajov, 6<sup>th</sup> edition, reprint : 2010, Jaypee Brothers Medical Publishers (p) Ltd. chap. 8, p.192.
2. <http://www.who.int/country/ind/en> [Accessed date 01.10.2014]
3. <http://www.mapsofindia.com/my-india/india/rising-cases-of-cancer-in-india> [Accessed date 01.10.2014]
4. <http://articles.timesofindia.indiatimes.com/2013-12-18/bhopal/45336286-1-cancer-cases-incidence-breast-cancer> [Accessed date 01.10.2014]
5. <http://articles.timesofindia.indiatimes.com/keyword/cancer-registry>
6. Perez Carlos A., Editor. Radiation Oncology, Management decisions, 2nd ed. Philadelphia: Lippincot Williams & Wilkins; 2002, p.4
7. Charaka, Charaka Samhita, Vidyotini teeka, Pt. Kashinath Shastri, Uttarardha, Chikitsa sthana, chap. 12, p. 372, Varanasi: Chaukhamba Bharati Academy, Reprint: 2009, Charak samhita and Charak Samhita, Ayurveda Deepika Commentary by Chakrapanidatta, Dr. B. K. Dwivedi, part-1, Sutra Sthana, Chap. 18, p.376, Varanasi: Chowkhamba Krishnadas Academy, India.
8. Sushruta, Sushruta Samhita, Ayurveda Tatva Sandeepika, Ambikadatta shastri, Purvardha, Nidan sthana chap. 11, p.352, And Chikitsa sthana chap. 18, p.107-108, Reprint: 2010, Varanasi:Chaukhamba Prakashan, India.
9. <http://int.j.mol.sci.2010,11,5323-5338>
10. <http://www.jocpr.com>
11. Li, P., Matsunga, K., Yamakuni, T., Ohizumi Y. 2002. Life Science 71:1821-1835.
12. Indian Journal of Experimental Biology, Vol. 49, Dec. 2011, pp. 939-945
13. <http://www.scipharm.at>
14. Pharmacognosy Magazine, Vol. 3, issue 11, July-Sep.,2007.
15. International Journal of PharmTech Research, CODEN(USA): IJPRIF ISSN: 0974-4304 , Vol. 2, no. 1, pp 914-919, Jan-Mar 2010.

16. <http://peerj.com/preprints/96v1>
17. Department of Biochemistry, King George's Medical University, Lucknow, U. P., India, e-mail: mahdiaa@rediffmail.com
18. Sushruta, Sushruta Samhita, Ayurveda Tatva Sandeepika, Ambikadatta shastri, Purvardha, Sutra sthana Reprint: 2010, Varanasi: Chaukhamba Prakashan, India. chap. 38, page no. 185,
19. Vagbhatta, Ashtang Hridayam, Vidhyotini Teeka, Kaviraj Atrideva Gupt, Sutra sthana Reprint:2012 Varanasi: Chaukhamba Prakashan, India. chap.15, p.141.
20. <http://www.groups.eortc.be/qol>
21. PubMed- indexed for MEDLINE, published online on: Friday, January 4, 2013, p.917-920,
22. Ayurvedic Pharmacopoeia of India.
23. Ayu. 2011 Apr-un; 32(2): 196-199.
24. An International Quarterly Journal of Research in Ayurveda, Ayu. 2005.
25. Pharmacogn Rev. 2012 Jan-Jun; 6(11): 61-67.