



UNDERTAKING BY AUTHOR(S)

I/ We undersigned, give an undertaking to the following effect with regard to our article entitled **Ayurvedic approach for Management of Adenocarcinoma of Colon : A case study**

Submitted for publication in the Ayurveda Sameeksha journal :

1. The article mentioned above has not been published or submitted to or accepted for publication in any form, in any other journal.
2. We also vouchsafe that the authorship of this article will not be contested by anyone whose name(s) is/are not listed by us here.
3. I/We declare that I/We contributed significantly towards the research study i.e., (a) conception, design and /or analysis and interpretation of data and to (b) drafting of the article or revising it critically for important intellectual content and on (c) final approval of the version to be published.
4. I/We hereby acknowledge Ayurveda Sameeksha's conflict of interest policy requirement to scrupulously avoid direct and indirect conflicts of interest and, accordingly hereby agree to promptly inform the editor or editor's designee of any business, commercial, or other proprietary support, relationships, or interests that I/ We may have which relate directly or indirectly to the subject of the work.
5. I/We also agree to the authorship of the article in the following sequence:

Author's Names (in sequence)

Signature of Authors

1. Dr. L.H.S.Umayangani

2. Dr. S. Kaluthotage

COPYRIGHT TRANSFER AGREEMENT FORM

This document must be signed by all authors and submitted with the manuscript.

The Ayurveda Sameeksha journal is published annually by the Department of Ayurveda, Ministry of Health and Indigenous Medicine, Sri Lanka.

The Ayurveda Sameeksha and authors hereby agree as follows: In consideration of Ayurveda Sameeksha reviewing and editing the following described work for first publication on an exclusive basis:

Title of the manuscript: **Ayurvedic approach for Management of Adenocarcinoma of Colon : A case study**

The undersigned author(s) hereby assigns, conveys, and otherwise transfers all rights, title, interest, and copyright ownership of said work for publication. Work includes the material submitted for publication and any other related material submitted to Ayurveda Sameeksha. In the event that Ayurveda Sameeksha does not publish said work, the author(s) will be so notified and all rights assigned hereunder will revert to the author(s).

The assignments of rights to Ayurveda Sameeksha includes but is not expressly limited to rights to edit, publish, reproduce, distribute copies, include in indexes or search databases in print, electronic, or other media, whether or not in use at the time of execution of this agreement, and claim copyright in said work throughout the world for the full duration of the copyright and any renewals or extensions thereof.

.....

Dr. L.H.S.Umayangani

A single case study of treating Adenocarcinoma of colon with Ayurvedic medicine.

Authors –

Dr.L.H.S.Umayangani – Medical officer ,Bandaranaike Memorial Ayurvedic Research Institute

Email - drlhsumayangani@gmail.com

Dr. S. Kalthotage – Deputy director , Bandaranaike Memorial Ayurvedic Research Institute, Navinna, Sri Lanka

Email - swarnakaluthotage@gmail.com

Total number of page -12

Total number of table - 2

Ayurvedic approach for Management of Adenocarcinoma of Colon: A case study

L.H.S.Umayangani^{1*}, S. Kaluthotage¹

1. Bandaranaike Memorial Ayurvedic Research Institute, Navinna, Sri Lanka

Abstract

Cancer is one of the most dreaded diseases worldwide, which is a major cause of morbidity and mortality, with approximately 14 million new cases and 8 million cancer- related deaths in 2012. Colorectal cancer was the third highest incidence globally among male population. In Sri Lankan Indigenous systems of medicine are often considered effective for treating Adenocarcinoma of colon and many medical recipes which are successfully prescribed in cancer in order to decrease the spread of abnormal cells throughout body. This study was to assess the Ayurvedic treatment modality on the management of colon adenocarcinoma. The present study was carried out at the cancer clinic at the Bandaranaike Memorial Ayurvedic Research Institute for twenty weeks. Detailed history, clinical examinations, and relevant

investigations were conducted at the clinic. Oral administration of three herbal formulations namely *Sharibhadyasawa* -60ml/day, *Cheena ala choorna* -10g/day and *Kaishora guggulu* - 2/day were applied for the patient throughout the period of study. Initial CEA (Carcino Embrayonic Antigen) of the patient was 14.5 ng/ml and CA125 of the patient was 343. After twenty weeks of the treatment, CEA of the patient was found 10.4 ng/ml, CA125 value was 155 and symptoms were decreased. According to *panchapadartha analysis*, *katu* , *tikta*, and *kashaya rasas* and *Laghu*, *Ruksha* and *tikshna gunas* are predominant of the drug modality. All of things are useful for the pacifying *kapha dosha* and *vata dosha* as well as cleansing the *srothas*. These mechanism leads to control tumour proliferation. According to that this regimen is helps to control the tumour development and symptomatic relief was maintained.

Key word: Adenocarcinoma of colon, Ayurvedic treatment modality, *Panchapadartha*

Introduction

Among non-communicable diseases, cancer places enormous strains on the health care systems of developing countries and non-developing countries in the world. Cancer is a major cause of morbidity and mortality, with approximately 14 million new cases and 8 million cancer related deaths in 2012, affecting populations in all countries and all religions. The five most sites of cancer diagnosed in 2012 were the lung (16.7% of the total), prostate (15%), colorectum (10%), stomach (8.5%) and liver (7.5%) in men and the five most common incident sites of cancer were the breast (25.2% of the total), colo-rectum (9.2%), lung (8.7%), cervix (7.9%) and stomach (4.8%) in women. According to statistics among women, the second highest incidence was colorectal cancer (14.3 per 100 000) ^[1]. Colo-rectal carcinoma has various etiological factors include inflammatory bowel disease, dietary factors (high intake of

red meat, high intake of fat, increase intake of calcium, low intake of dietary fiber) smoking and alcohol intake. A family history of colorectal cancers or polyps, especially in *first-degree* relatives is also a strong risk factor^[2].

According to Ayurveda concept the renowned Ayurvedic classics *caraka samhita* described *Arbuda in the chapter of soppa* ^[3] and *Susrutha samhitas* has more information on *Arbuda, Granthi, Apachi, Gandamala* etc ^[4], In *Astanga hrudaya* was mentioned about *arbuda* of lips, tongue, nose breast etc. *Madava nidana* described cancer as '*Vidradhi* (Tumour). When the involvement of One or two *doshas*, it will occur non inflammation/ minor neoplasm (*Granthi*) which is not harmful and when the involvement of three *doshas* it will occur inflammatory/malignant neoplasm (*Arbuda*) which is dangerous. According to *Samhitas*, they defined *Vata & other dosas* associated with *Kapha dosha* getting aggravated, vitiated muscle, blood, and fat tissues Which is round, static (immovable) with mild pain, big size, Deep seated, growing slowly and not ripening (forming puss): this disease called as '*Arbuda*'. The concept of Ayurveda, *Tridoshic* tumours are usually malignant because all three major body humors (*doshas*) lose mutual coordination. The action of ayurvedic drugs which are explained as '*panchapadartha*'. There are taste (*rasa*), physical properties (*guna*), the potency (*virya*), attributes of drug assimilation (*vipaka*), and the specific action (*prabhava*). All these factors represent different aspects of the *mahabhutas* of which the drug is composed. The objective of this case study was to evaluate the efficacy of the ayurvedic treatment modality of the colon adenocarcinoma in Ayurveda aspect.

Case presentation

A 56-year-old-female patient visited to cancer clinic, Bandaranaike Memorial Ayurvedic Research Institute, Navinna, with chief complains with flatulence, abdominal pain, and

constipation since three months. The patient was diagnosed as bilateral ovarian and omentum deposits of a mucinous adenocarcinoma. They have suggested that the primary site was in large bowel. She was taken Colonoscopy report and found carcinoma of sigmoid colon at 25cm narrow luma and second growth at 40cm. She was done on chemotherapy in July 2013. She presented to our clinic in November 2015. She had not obtained any kind of treatment during this period. Her CEA (Carcino-Embryonic Antigen) count was 14.5ng/ml and CA 125 count was 343. By following treatment principles of Ayurveda, oral medicine administration of three herbal formulations namely *Sharibhadyasawa*, *Cheena ala choorna* and *Kaishora guggulu* were applied for the patient throughout twenty weeks of period of study. Table 1 is mentioned as the treatment modality of this study.

Table 01

Oral drug	Dosage form	Dose	Drug vehicle	Duration
<i>Sharibhdyasawa</i>	Liquid	30ml- morning 30ml- evening	None	20 weeks
<i>Kaishora guggulu</i>	Pill	1 pill –morning 1 pill – morning	Warm water	20weeks
<i>Cheena ala powder</i>	Coarse Powder	5g – morning 5g - morning	Bee honey	20 weeks

Management & Outcome

Response of the treatment was recorded and therapeutic effects were evaluated by relevant investigational study of the patient [Table 2]. It was observed that the patient's clinical symptoms were reduced gradually during the treatment.

Table 2

Date	CEA	CA125
Pre treatment	14.5 ng/ml	343
4 th week	12.2 ng/ml	
10 th week	12.2 ng/ml	196
20 th week	10.4 ng/ml	155

Initial CEA (Carcino Embryonic Antigen) of the patient was 14.5ng/ml and CA 125 was 343. After twenty weeks of the treatment CEA of the patient was 10.4 ng/ml, the value of the CA125 was 155 and symptoms (Gastritis, Abdominal pain, Constipation) were decreased. Ultrasound scan was normal.

Discussion

According to Ayurveda philosophy, pathogenesis of *Arbuda* described as, decrease state of *dhatwagni* (deranges of metabolism) which leads to excessive tissue growth. *Vata dosha* associated with anabolic phase of growth and *kapha dosha* associated with catabolic phase. As the result aggravation of *vata dosha* and suppression of *kapha dosha*, this leads to cell proliferation.

The action of herbal drugs which are described as taste (*rasa*), physical properties (*guna*), the potency (*virya*), attributes of the drug assimilation (*vipaka*) and the specific action (*prabhava*). All these factors inside the drug are mostly interconnected and interdependent. All the factors effect to the *dosha* viz *vata*, *pitta*, *kapha* ^[7, 8]. In this treatment modality different forms of preparation were mentioned. These recipes are mainly plant based and Ayurveda philosophy has mentioned solid philosophy to define pharmacodynamics and treatment protocol. The pharmacodynamics of the drugs in this modality are analyze according to *panchapidartha*. When the *Rasa* is considered the majority of drugs have shown *katu*, *tikta*, and *kashaya rasas* as predominant *Rasa*. Also most of the drugs were bearing *Laghu*, *Ruksha* and *tikshna gunasa*^[12]. All of things are useful for the pacifying *kapha dosha* and *vata dosha* as well as cleansing the *srothas*. These mechanism leads to control tumour proliferation.

In addition Herbal drugs are known to control immunomodulatory properties and generally act by stimulating both specific and non-specific immunity ^[5]. In Ayurvedic texts there are wide range of herbs and compounds used for cancer treatment. The immune system is a sophisticated defense system within mammalians, to protect them from invading agents. The defense mechanisms of human protect an individual from microorganisms and potentially harmful material. It uses a variety of cells, tissues, and organs and is capable of recognizing and eliminating invading pathogens. Modulation of immune system denotes to any change in the immune response that can involve induction, expression, amplification, or inhibition of any part or phase of the immune response. Immunomodulator defined as a substance used for its effect on the immune system. There are two types according to their effects viz immunosuppressant and immune-stimulators. They have ability to mount an immune response or defend against pathogens or tumours. At present the active components of medicinal plants

have been shown to be an important source of immunomodulators [6]. There are a number of herbal compounds which can act as Immunomodulatory property Antioxidant and anticancer properties viz *Hemidesmus indicus*, *Cyperus rotundus* Linn, *Symplocos racemosa*, *Ficus benhalensis*, *Curcuma zedoaria* , *Prunus cerasoides*, *Cissampelos pareira*, *Phyllanthus emblica* , *Tinospora cordifolia*, *Moringa oleifera*, *Vitis vinifera*, *Andropogon muricatum*, *Santalum album*, *Pterocarpus santalinus*, *Trachyspermum ammi* , *Picrorhiza scrophulariflora*, *Cinnamomum tamala* , *Osbeckia octandra*, *Saussurea costus* , *Terminalia chebula*, *Cassia senna* , *Commiphora wightii*, *Terminalia bellerica*, *Piper nigrum*, *Piper longum* *Embelia ribes*, *Baliospermum montanum*, *Smilax china* (L.)^[13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40] .

According to Ayurveda concept *Vyadhikshamatva* implies a resistance against the loss of the integrity, proportion, and interrelationship amongst the individual's *dosha* and *dhatu*. The factors which contribute to the body immunity are normal *doshas*, equilibrium state of *dhathu* and *agni*, potency of *srotas* (micro channels)^[10,11]. Therefore drug can influence 'ama' in two ways viz increase digestion capacity and prevent formation of *ama*. The pharmacodynamics of the above drugs, *ushna veerya* is significantly increased which leads to increase digestion capacity and prevent formation of 'ama'^[12].

Conclusion

Considering *Panchapadartha* of above drugs of the treatment regimen Majority of ingredients have *Katu*, *Tikta kashaya rasa*, *Laghu*, *Teekshna*, *Ruksh*, *Guna*, *Ushna veerya*. Therefore this treatment regimen is rich with *Tridosha shamaka*, *Srothas avarodha nashaka*, *Ama pachana*. Also a Pharmacological action of the ingredients of the treatment regimen has anti cancer immunomodulation and antioxidant. According to that this regimen is helps to control the tumour development and symptomatic relief was maintained. Further establish this treatment

regimen in management of Adenocarcinoma of colon, a study involving larger sample size is needed. Further investigations are required to evaluate the efficacy of this drug modality in controlling Adenocarcinoma of colon.

Reference

1. Bernard W Stewart, Christopher P. Wild. (2014), World Cancer Report 2014, International Agency For Research On Cancer 2014, pp 16,17
2. P.P. Bapsy (2004), Clinical Approach To Oncology, Byword Viva Publishers Private Limited, pp10-12
3. Prof.K.R.Sri Kantha Murthy 2001 Susrutha Samhita, Chaukhambha Orientalia Vol I(11) 4-23
4. G.D.Singhal, S.N.Tripathi, K.R. Sharma 1985 ,Sri Madhavakara Madhavanidana, Sanskrit Text And Madhukosha Commentary With English Translation , The Chaukhambha Orientalia Part II, Uttarardha Chapter 40
5. Steven Foster 1991,Echinacea - Nature's Immune Enhancer,2nd edition, Healing heart press, Missouri,
6. Mahiuddin Alamgir and Shaikh Jamal Uddin, 2010 Recent advances on the ethnomedicinal plants as immunomodulatory agents, A source of complementary therapeutics, Research signpost, pp227-244
7. Vaidya Bhagawan Dash,1995, Fundamentals of Ayurvedic Medicine , Konark publishers PVT LTD

8. Prof. R.H.Singh, 1998, The Holistic Principles of Ayurvedic Medicine, Chaukhamba Sanskrit pratishthan, First edition
9. Dr.R.K.Sharma And Vaidya Bhagwan Dash(2016), Caraka Samhita Series Of, Varanasi, Chowkhamba Publications, Vol III chikitsa sthana12/87 pp 511
10. Dr. Kanjiv Lochan Astanga Hridaya Of Vagbata (2017), The Chaukhamba Publications, Vol III, Uttara sthana 30-3 Pp 264-265
11. Dr.R.K.Sharma And Vaidya Bhagwan Dash(2016), Caraka Samhita Series Of, Varanasi, Chowkhamba Sanskritisbn978-81-7080-012-9 Vol I Suthra sthana.28/7
12. The Ayurvedic Pharmacopoea Of India, 2001 Government Of India ,Ministry Of Health And Family Welfare, Department Of Ayush Part 1 Volume I,II,III,V
13. Lalrinpuia, Manjit Bora, S.N. Upadyay, Koyel Mukherjee, Jayram Hazra, Pharmacological and therapeutic profile of Anantamula (Hemidesmus indicus[L.] R.BR. : A comprehensive review International Journal of Ayurveda and Pharma Research, 2017
14. Sri Ranjani Sivapaalan, Medicinal uses and Pharmacological activities of Cyperus rotundus Linn – A Review, International journal of Scientific and research publications, 2013,1/3
15. Hanumant U.Bhusnar, Dheerj H. Nagore, Sanjay U Nipanikar, Phytopharmacological profile of Symplocos racemosa, Pharmacologia, 2014, pp76-83,
16. Saurabh Chaudhary, Shashi ALok, S.K.Jain, Dilip Kumar Chanchal, Archana Dongray, Phytopharmacology and pharmacognostic properties of Ficus benghalensis- A review, International journal of Pharmacolognosy, 2018, 51,
17. Ali, Esmail Al- Snafi, Pharmacology of Ficus religosa – A review, Journal of Pharmacy 2017, 7/3, pp49-60

18. S.Lakshmi, G.Padmaja, P Remani, Antitumour effects of Isocurcumenol isolated from *Curcuma zedoaria* Rhizomes on Human and Murine cancer cells, , International journal of medicinal chemistry, 2011
19. Nini Joseph, Yogesh Chandra Tripathi, *Prunus cerasoides* D. Don: A Review on its Ethnomedicinal Uses, Phytochemistry and Pharmacology, International Journal of Pharmaceutical Science Research and review, 2018, 48(1)pp62-69
20. Anand Bafna, Shrihari Mishra, Antioxidant and Immunomodulatory activity of the Alkaloidal fraction of *Cissampelos pareira* Linn, *Scientia Pharmaceutica* 2010,78, pp21-31
21. Rubaiyat Hasan, Nasirul Islam, Rokibul Islam Phytochemistry, pharmacological activities and traditional uses of *Embelica officinalis*: A review, International Current Pharmaceutical journal, 2016(2)pp14-21
22. Priyanka Sharma, Bharat P.Dwivedee, Dheeraj Bisht, Ashutosh K. Dash, Deepak Kumar, *Heliyon Tinospora cordifolia*, The chemical constituents and diverse pharmacological importance of *Tinospora cordifolia*, 2019,5(9)
23. Birendra Kumar Paikra, Hemant Kumar J. Dhongade, Bina Gidwani Phytochemistry and Pharmacology of *Moringa oleifera* Lam, *Journal of Pharmacopuncture* 2017,20 (3)pp,194-200
24. N.S.S.A.Valli Kangaral, I.J.Kuppast, T. Veerashekar, Chindala Laxman Reddy, A review on benefits and uses of *vitis vinifera* (, *Research & Review in Biosciences review* 2013, 7(5)pp,175-180
25. Rakesh Kumar, Nishat Anjum , Y.C. Tripathi, Phytochemistry and pharmacology of *Santalum album*: A review, *World Journal of pharmaceutical research* 2015, 4/10 pp1842-1876

26. Saradamma Bulle, Hymavathi Reddyvari, Varadacharyulu Nallanchakravarthula, Damodara reddy Vaddi, Therapeutic potential of *Pterocarpus santalinus* L: An Update, Pharmacognasy review, 2016 10(19)pp:43-49
27. KK Chahal, K Dhaiwal, A Kumar, D Kataria and N Singla, Chemical composition of *Trachyspermum ammi* L. and its biological properties : A review, Journal of Pharmacognosy and phytochemistry, 2017, 6(3),pp:131-140
28. Naresh Kumar, Tarun Kumar and Surendra Kr. Sharma, Phytopharmacological review on genus *Picrorhiza*, International journal of Universal pharmacy and bio sciences, 2013, 2(4)
29. Seema Mehta, Vijay K, Purohit and Harish C. Andola, Pharmacological activities of *Cinnamum tamala* Nees & Eberm and medicinal Implication: A review, Medicinal & Aromatic Plants, 2014, 3-4
30. Bosco Lawrence and Murugan KA, Comprehensive evaluation of antioxidant potential of selected *Osbeckia* species and their in vitro culture, purification and fractionation, Multifaceted journal in the field of Natural products and pharmacognosy, 2017, 9(5) pp:674-682
31. Pandey MM, Rastogi S, Rawat AKS, Botanical, chemical and pharmacological review of an ayurvedic medicinal plant, Journal of ethnopharmacology, 2007, 110(3),pp:379-390
32. Aparna Upadhyay, Pooja Agrahari, D.K. Singh, A review on the pharmacological aspect of *Terminalia chebula*, International journal of Pharmacology, 2014,10(6),pp: 289-298
33. Vahl, Shabina Ishtiaq, Ahmed, Muhammad Qasim, Muhammad Tahir, Qaisar Mansoor, Muhammad Ismail, Kristen Keck & Robert B Bates, Pharmacologically

- active flavonoids from the anticancer, antioxidant and antimicrobial extracts of cassia angustifolia BMC Complementary Alternative Medicine, 2016, pp460
34. Prerna Sarup, Suman Bala, Sunil Kamboj, Pharmacology and phytochemistry of Oleo-Gum Resin of Commiphora wightii (Guggulu), Scientifica, 2015
35. Ashutosh Gupta, Ramesh Kumar, Shashank Kumar, Abhay K Pandey, Pharmacological aspect of Terminalia belerica, Molecular biology and pharmacognosy of beneficial plants 2017
36. Zoheir A Damanhour, Aftab Ahmad, A review on Therapeutic potential of Piper nigrum L.(Black pepper): The King of spices Medicinal & Aromatic plants, 2014, 3-3
37. Chauhan Khushbu, Solanki Roshini, Patel Anar, Macwan Carol, Patel Mayuree, Phytochemical and therapeutic potential of Piper longum Linn A review, International journal of research in Ayurveda & Pharmacy, 2011, 2(11), pp 157-161
38. Bharat Lal, Neeraj Mishra, Importance of Embelia ribes : An Update, International journal of pharmaceutical science and research ,2018, 0-83
39. Ravindra G. Mali, Raju R, Wadekar, Balispermum montanum(Danti): Ethnobotany, phytochemistry and pharmacology – A review, International journal of green pharmacy, 2008, Anti oxidant, Anti cancer, Immunomodulation
40. Shiyao Huo, Yiwei Zhang, Jiayue Liu, Lin Dong, Jun Huang, Dingbo Lin and Xueyan Fu, Ethnomedicine, Phytochemistry and pharmacology of smilax glabra : An important Traditional chinese medicine, The American journal of Chinese medicine 2018 ,46(2), pp261-289