



**International Journal of Biology, Pharmacy
and Allied Sciences (IJBPAS)**

'A Bridge Between Laboratory and Reader'

www.ijbpas.com

EFFECT OF YONIVARTI WITH ABHYANTARA CHIKITSA IN KAPHAJ YONIVYAPAD –A CASE STUDY

PATEL SP¹ AND KARKARE M^{2*}

- 1:** PG Scholar¹, PTSR Department, Parul Institute of Ayurveda, Parul University, Limda, Vadodara, Gujarat
- 2:** Professor & HOD of PTSR Department, Parul Institute of Ayurveda, Parul University, Limda, Vadodara, Gujarat
- 3:** Final year PG Scholar, Department of Prasuti Tantra Evum Stree Roga, Parul Institute Of Ayurveda, Vadodara, Gujarat

***Corresponding Author: Dr. Karkare M; E Mail: mrkarkare@gmail.com**

Received 12th Dec. 2021; Revised 14th Jan. 2022; Accepted 7th Feb. 2022; Available online 5th March. 2022

<https://doi.org/10.31032/IJBPAS/2022/11.3.1026>

ABSTRACT

Health status of women is essential for healthy society. In today's fast and competitive world, there is change in lifestyle of women which lead to their physical & mental stress. Women mostly get affected by this environment and are prone to gynaecological problem. Common health problem in women is white discharge, Foul smelling discharge, itching vulvar region, this all are symptoms of kaphaj yonivyapad .40% of women suffer from this problem but neglect the problem. Dosha involved in kaphaj yonivyapad is Kaphapradhan vata. Panchkashaya yonivarti with Jeerakadi vati is used to terminate the samprapti of this disease. Yonivarti is a modality of treatment which acts at the site of the disease .This case study is an attempt to evaluate the practical application of yonivarti with Aabhyantar chikitsa in management of kaphaja yonivyapad.

Keywords : Yonivarti , Kaphaj yonivyapad ,shaman chikitsa, Sthanik chikitsa

1. INTRODUCTION :

Ayurveda is rich in pharmaceutical preparations but only few preparations are being used in today's Ayurvedic practice because of inconvenient forms. In the management of kaphaj yonivyapad many kalpana like yoniprakshalan, yonipichu, yonivarti are mentioned. Nearly 40% of women in reproductive age group suffer from white discharge. Modern line of treatment includes antibiotics, antifungal, antihistaminics, which gives temporary relief. Most common cause of symptomatic vaginal discharge is bacterial vaginosis (33-47%), followed by candidiasis (20-40%) and trichomoniasis (8-10%). These three organisms account for 90% of all the of abnormal vaginal discharges. This study was planned to evaluate the efficacy of panchkashaya yonivarti with jeerakadi vati in kaphaja yonivyapad.

2. AIM:

- To evaluate the efficacy of panchkashaya yonivarti with jeerakadi vati in kaphaja yonivyapad.

3. OBJECTIVE :

- To study and understand the etio-pathogenesis of kaphaja yonivyapad.

- To study the clinical effect of shaman chikitsa with yonivarti in kaphaja yonivyapad.

4. Case report :

Study center : Parul Ayurveda Hospital ,Vadodara Gujarat

Name of patient : XXX

Reg OPD No : 21017383

Reg IPD No :212402

Date of 1st visit : 20/8/21

Region : Hindu

Occupation : Housewife

Chief complain:

- Yonigata shweta srava since 2-3 years.
- Yonikandu since last 3 years.
- Yonidaurgandhya since last 1 year.

Associated Complaints:

- Katishula since 3 years.

HISTORY OF PRESENT ILLNESS:

A 48 years female patient suffering yonigata shweta srava since last 2-3 years was visited the striroga-prasutitantra OPD of Parul ayurveda hospital (PAH). She was suffering from yonigata shweta srava(white discharge p/v) which is mucoid in nature, katishula (Lowerbackache), yonikandu (itching at vulva) since last 3 years. A detailed history of the patient was taken and all required physical and clinical examinations were

done. She had taken treatment earlier privately but didn't get satisfactory relief in complaints.

Past treatment history:

- Vaginal tablets and cream
- Oral antibiotics

History of past illness: No any major illness.

History of surgery : No history of surgery

Family history : No any Family history

Menstrual history:

- Age of Menarche : 13 years
- LMP : 2/8/21
- Menstrual cycle :
 - Regularity : Regular
 - Duration : 2-3 days
 - Interval : 28-30 days
 - Association of pain : no
 - Quantity : 2-3 pads/day
(Moderate flow)
 - Not associated with clots and foul smell
- **Marital History** :
Married since 23 years.
No history of any type of contraception .
- **Obstetrics History** :
P4L4D0A0
P1:P2:P3:P4:All FTND at Hospital

Personal history:

Diet : Mixed –veg / nonveg

Dietetic habits : Samasana

Rasa Sevana : Madhura, Tikta

Appetite : Poor

Bowel : Regular

Micturation : 4-5 times /day ; 1-2 times /day

Kostha : Madhyam

Thirst : Normal

Personal Hygiene : Poor

Sleep : Disturbed

Sexual Life : Satisfactory

General Examination:

Height : 158 cm

Weight : 65 kg

BMI : 26 kg/m²

Pulse : 80/min

B.P. : 120/80 mm of Hg

R.R. : 18/min

Temp : 98.6 F

Tongue : Slightly coated

Pallor /cyanosis /Oedema : Absent

Systemic Examination:

RS, CVS, CNS, and GIT- NAD

Astavidha pariksha :

- Nadi = 86/min, madhyama bala
- Mala = Grathita mala pravrutti
- Mutra =Samyak
- Jihva =Saam
- Shabda =Avishesh

- Sparsh =Anushna
- Druka =Panduvarna
- Akrti = Sthul

Per abdomen Examination:

- Abdomen was soft, No organomegaly
- No tenderness present.

Per speculam: white discharge +++,
cervix Inflamed

Per vaginal examination: ut RV/Mobile
fornicis nontender

Investigation (23/8/2021)

- CBC : wbc:6900 /cumm
Hb:9.0 g/dl
Rest : within normal limit
ESR: 45 mm
- Urine routine micro : Pale yellow in
colour, clear, P.H.:6.0 Sp G :

1.015,Protein:Nil, Blood : Nil ,pus
cell ;2-3 /HPF

- Vaginal swab culture (21/8/2021): the
smear shows moderate puss cell & no
organism.

Samprapti ghatak:

Dosha : kaphapradhan vata

Dushya : rasa ,mansa

Srotas : rasavaha, aartavavaha

Srotodushtiprakara: Atipravrutti, vimarg gaman

Marga : abhyantara

Agni : Mandagni

Aam : Sama

Udbhava sthana :pakvashaya

Vyaktasthana: Yoni

Samprapti:

The prakruti of patient being vata –Kaphapradhan



She was predisposed to Kapha –vataprapakopa Hetusevan like



Aaharajanya nidana- Ruksha Annapan (Dry foods), Aniyamita Ahara sevana (Irregular food
habits), Dadhi sevan

Viharajanya Nidana- Diwaswap (Day sleep), Poor vaginal Hygiene



All this Nidans lead to Kha-vaigunya in trayavarta yoni



Yoni Dushti in the form of inflammation presenting as mucoid white discharge per vagina,
ithching per vagina, Foul smelling Discharge and Backche.

Intervention:**Sthanika chikitsa:**

- Yoni prakshalana with luke warm water.
- Yonivarti

Method of yonivarti:**Poorvakarma :**

- Counselling was done.
- Written consent was taken.
- Shaving and part prepration .
- Patient was advised to empty the bladder.
- Instrument trolley was prepared.
- Yoni prakshalana with luke warm water done.

Pradhana karma:

- Private part was cleaned antiseptically.
- Sim's speculum was inserted; Anterior vaginal wall retractor was introduced to expose the cervix.
- Prepared varti was introduced to endocervix.
- Instruments was removed out.

Paschat karma:

- Patient was monitored for 30 minutes after the procedure.

Safety precautions:

- Instruction was given to patient to avoid sexual intercourse, heavy work, journey, etc,. during and for 7days after the procedure.

	Sthanika Chikitsa	Abhyantara Chikitsa
Drug	Panchkashaya yoni varti (vacha ,vasa , patol, priyangu ,nimba) (for external use)	Jeerakadi vati Jeerak, Krishna-jirak, Pippali,Karvellak,Vacha,Vasa, Saindhava, Yavakshara,Yavanika
Dose	3 gm	500mg 1 vati BD A/F
Duration	7 Days	7 Days
Follow up	8th day	

Pathya-apatya: She was advised to follow the follow Ahara-Vihara Pathyas as follows

Ahara 1. Drink plenty of water.

2. Eat fibrous diet, fruits, green vegetables.

3. Garlic, meat soup, rice water

Vihara 1. Keep the area clean and dry.

2. Maintain personal hygiene.

3. Wash the garments in boil water and Dettol and then dry it in sunlight.

OBSERVATION / RESULT:

Day	Date	Treatment given	Observation
1	20/08 /2021	1. Panchakashaya yonivarti F/b sukhoshna jalaprakshalan 2. Jeerakadi vati 500mg 1 vati BF BD	<ul style="list-style-type: none"> • Mucoïd white discharge P/v +++ • Itching p/v +++ • Foul smellind discharge +++ • Backache +++
3	22/08 2021	Same as above	<ul style="list-style-type: none"> • Mucoïd white discharge P/v +++ • Itching p/v ++ • Foul smellind discharge ++ • Backache +++
5	24/08/2021	Same as above	<ul style="list-style-type: none"> • Mucoïd white discharge P/v ++ • Itching p/v + • Foul smellind discharge + • Backache ++
7	26/08/2021	Same as above	<ul style="list-style-type: none"> • No Mucoïd white discharge P/v • No Itching p/v • No Foul smellind discharge • Backache +

On last day her all symptoms were reduce like white discharge p/v, Itching p/v, Foul smelling discharge, Backache. Panchkashaya yonivarti use in therapy has cleaned washed out the secretions and discharge of vagina. Varti helps medicine to remain for longer period for better action it diminishes the chance of infection in genital tract.

DISCUSSION

Panchkashaya yonivarti:

दुर्गधा पिच्छिला वाङ्गि चूरणे पंचककषायजेः ।
पंचककषायजः = वचा वासा पटोल प्रियंगु निम्बः ।
(bhav.ma.kha. chi.70/46)

The kaphaja yonivyapad is mainly due to vata –kaphakar hetusevan .This disease can be cured mainly by observing hygiene. Personal Hygiene is very important for every woman. In this patient the kaphaja yonivyapad deals with the vitiation of vata and kapha dosha, Pancha kashaya yonivarti and Jeerakadi Vati having specially vata-kaphahar properties by which it breaks the samprapti.

Name	B.N.	Family	Part use	Rasa	Guna	veerya	Vipak	Karma
1.vacha (1 part)	<i>Acorus calamus</i>	<i>Acoraceae</i>	Rhizome	Katu,tikta, kashay (anu)	Laghu , ushna	ushna	katu	Kapha vathar
2.vasa (1 part)	<i>Adhatoda vasika</i>	<i>Acantheceae</i>	leafe	Tikta, kashaya	Laghu ,ruksha	sheeta	katu	Kapha pitta har
3.patola (1 part)	<i>Trichosanthesdi oica</i>	<i>Cucurbitaceae</i>	fruit	Tikta, Katu	Laghu,ruk sha	sheeta	Katu	Kapha pittaghna
4.priyangu (1 part)	<i>Calicarpa marcophylla</i>	<i>Verbenaceae</i>	root	Tikta,kashaya, madhur	Laghu, ruksha	Sheeta, katu	katu	Tridosha shamak
5.nimba (1 part)	<i>Azacardia indica</i>	<i>Maliaceae</i>	leafe	Tikta, kashay	Laghu ,ruksha	sheeta	katu	Pittahara

- **Vacha** : *Vatahara, Kaphahara, Krimihara*
- antibacterial activity of *acoruscalamus* against *Escherichia coli*, *Staphylococcus aureus*, and *Candida albicans* have been studied. (11) Antibacterial effect of *Acorus calamus* extractions against gram positive and negative bacteria have been studied (12) antifungal activity demonstrated by Pratibha raval. (13)
- **Vasa** : The plant contains alkaloids such as Vasicine, vasicinone, deoxyvasicine, vasicol, adhatodinine, and vasicinol Other constituents include vitamin C, saponins, flavonoids as well as steroids, and fatty acids .Vasicine is reported to have uterine stimulant effects . Vasicine acetate showed antimycobacterial activity; the high phenolic content of essential oils contributes to their antimicrobial properties. (14), (15)
- **Patola** : *Vranasodhana, Vrana ropana*
- Antifungal activity Hariti and Rathee have stated that the fixed oil of seeds of *Trichosanthes* species including *T. dioica* has antifungal property. [16] Antibacterial activity Hariti and Rathee have showed antibacterial activity of the unsaponifiable fraction of the fixed oil of *T. dioica* seeds against *Bacilus anthracis* and *Xanthomonas malracearum*. [17] *T.dioica* has been reported to have Chemo Preventive Property. The Chemo Preventive Property of *T.dioica* was studied by Sanjib S Bhattacharya, Pallab Kanti P K Haldar.(18) Bhattacharya S,Haldar P K.. studied Protective role of triterpenoid enriched extract of *Tdioica* root against experimentally

induced pain and inflammation in rodents.(18) *Shivhare et al.* reported the wound healing potential of methanolic (MeOH) extract of *T. dioica* (19)

- **Priyangu** : *Daurgandhyahara, Vrana ropan*
- *callicarpa macrophylla* contains diterpene, diterpenoid, 3b, 16a, 17-trihydroxy-*phyllocladane, flavonoids. having antimicrobial and anti inflammatory property.*
- **Nimba** : *Vrana, Kushta, Krimiroga, Visaroga*
- The most important active constituent is azadirachtin and the others are

nimbolinin, nimbin, nimbidin, nimbidol, nimbanene, nimbandiol, nimbolide, nimbiol, sodium nimbinate, 6- desacetylnimbinene, gedunin, salannin, quercetin, ascorbic acid, amino acids, n-hexacosanol, β -sitosterol, 7-desacetyl-7-benzoylazadiradione, 7- desacetyl-7-benzoylgedunin, 17-hydroxyazadiradione, polyphenolic flavonoids. Neem constituents having antibacterial, antifungal, antimalarial, antiviral, antihyperglycemic, antiulcer, antioxidant, anticarcinogenic and other biological activities.

Jeerakadi vati:

जीरक द्वितय कृष्णा सुषवी सुरभिर्वचा ।

वासकः सैन्धवश्च अपि यवक्षार यवानिका ।।

एषा चूर्णं घृते किञ्चिद् भृष्टवा खण्डेन मोदकम् ।

कृत्वा खादेद्य अथवा वह्नि योनिरोगादी विमुच्यती ।।

(भ।प.म. योनिरोग 70/49)

Name	B.N.	Family	Part use	rasa	Guna	Veerya	vipak	Karma
1.jeerak (1 part)	Cuminum cyminum	Umbelliferae	Seed	katu	Laghu ,ruksha	Ushna	Katu	Kapha vathar ,pittakar
2 . Krishna jeerak (1 part)	Carum carvi	Umbelliferae	Seed	katu	Ruksha	Ushna	Katu	Kapha har
3.pippali (1 part)	Piper longum	Piperaceae	Fruit	katu	Laghu, Tikshna	Ushna	Madhur	Vat kapha har
4.karvellak (1 part)	Momordia churantia	Cucurbitaceae	Pancha ng	Tikta , katu	Laghu ,ruksha	Ushna	Katu	Pittagna
5.vacha (1 part)	Arocus calamus	Acoraceae	rhizome	Katu , tikta	Laghu ,tikshna	Ushna	Katu	Kapha vatghna
6.vasa (1 part)	Adhatoda vasika	acanthaceae	Leafe	Tikta , kashaya	Laghu , ruksha	Sheeta	Katu	Kapha pitta har
7.yavani (1 part)	Carum roxburghinu m	Umbelliferae	Seed	Katu, tikta	Laghu, ruksha, tikshna	Ushna	Katu	Kapha vathar

1. Jeeraka :

- Vatakapha saman, Deepan- Pachana, Vatanuloman, Shulaprashaman, Krumighna, Garbhashaya –vishodhana.
- Cuminum cyminum contained: alkaloid, coumarin, anthraquinone, flavonoid, glycoside, protein, resin, saponin, tannin and steroid. *Cuminum cyminum* having antimicrobial, anti-inflammatory, analgesic, antioxidant, anticancer, antidiabetic, antiplatelet aggregation, hypotensive, bronchodilatory, immunological, contraceptive, anti-amyloidogenic effects(21)

2. Krishna jeeraka :

- Daurgandhyahara, Rochana, Deepan, Pachana, Garbhashaya sodhana
- carum carvi contain mainly carvacrol, carvone, α -pinene, limonene, γ -terpinene, linalool, carvenone, and *p*-cymene.
- The antibacterial activity of carvacrol (5-isopropyl-2-methylphenol) is amply documented in various experimental studies (22)
- Monoterpenes like anethofuran, carvone, and limonene occurring in cumin and caraway oil have specifically been highlighted for anticarcinogenic action. (23)

- An aqueous and an ethanolic extract of caraway seeds produced significant antifertility effect via modulation of follicle stimulating hormone (FSH) and leutinizing hormone (LH) levels, while the estrogen levels were increased. (24)
3. *Vatahara, Kaphahara, Rasayan, Krimi, Kustha, Sula*
- fruits contain the alkaloid piperine,
 - various studies proven the antiinflammatory, antiamoebic, antibacterial activity (25)(26)(27)
4. *Karvellak: Vatahara, Kaphahara, Bhedi, Kustha, krimiroga*
- The fruits and leaves contain alkaloids, glycoside, saponin-like substances, resin, an aromatic volatile oil and mucilage. Reports also show that the plant has anti-tumor and anti-HIV activities. (28)
5. *Vacha* :
- Vatahara, Kaphahara, Krimihara*
6. *Vasa* : *Kaphapittahara,*
7. *Saindhava* : *Tridoshanashak, Avidahi*
- Agnideepana, Pachana, Ruchya, Netriya, Hridya, Vrishya
8. *Yavakshara* : *Tridoshanashak, Avidahi*
9. *Yavani* : *Rochana, Deepan, Pachana, Vatanuloman, Krimighna*
- Compounds found in *Carum roxburghianum* were α -pinene (0.42%), β -pinene (0.15%), myrcene (0.22%), Δ -carene (3.27%), limonene (16.43%), α -terpinene (1.44%), thymol (3.61%), linalool (1.07%), carvacrol (14.68%), carvone (2.29%), 1-cadinene (0.14%), β -elemene (0.99%), α -humulene (1.27%), elemol (38.56%) and cadinol (14.42%). The percentage of unidentified components was (0.93%).
 - *C. roxburghianum* was very active against bacteria and yeasts(29)
 - The antimicrobial activity of essential oil of *Carum roxburghianum* were carried out and the oil showed antimicrobial activity against two gram positive, two gram negative bacteria and four fungi.(30)
 - Jeerakadi modaka mentioned by Bhavaprakasha contains Swetajeerak, Krishnajeerak, Pippali, Karvellak, Vacha, Vasa, Saindhavalavana, Yavakshara, Yavanika. All the ingredient having mainly katu, tikta rasa, laghu, ruksha guna and ushna veerya. It has vedanaasthapana, vatahara, anulomana and rasayana properties.

- The drugs vacha ,vasa, patola, priyangu, nimba has been used in yonivarti .
all the dravya having tikta Kashaya rasa ,laghu ruksha guna and katu vipak due to its ruksha guna it is Kapha samak .By going through each ingredient's rasa, guna, virya, vipak, prabhava and karma, we came to know that each and every ingredient has the property of vata and kapha saman individually. Insertion of yonivarti is a practical procedure which is performed by the disinfectant and medicated yonivarti . Yonivarti are meant for insertion into vagina , for the purpose of removal of accumulated dosha at local site, for reducing vaginal discharge, Foul smell and Pain. It is one of the upakrama of sthanika chikitsa in Ayurved. Panch kashaya yonivarti having properties like vrana sodhana, kledahara, krimighna, kandughna is selected. The sthanika chikitsa used as the mode of treatment has helped in local cleanliness and prevention of further infections by the micro-organism invasion. It had given the natural antibiotic effect without any side effect.

CONCLUSION

Thus we can conclude that the holistic approach of Ayurvedic system of medicine & sthanik chikitsa with abhyantara chikitsa plays an important role and gives relief to patient.

REFERENCES

- [1] *Text book of Gynecology D.C.Dutta Edited by Hiralal Konar New Central book agency 5th edition.*
- [2] *Charak samhita chaukhamba prakashan chikitsa adhyaya 30*
- [3] *Agnivesha, charaka & dridhbala.charaka samhita ,edited by vaidhya jadhavaji trikamaji acharya. reprint edition, chaukhamba subharati ptrakasana, Varanasi, 2011;chikisa sthanna 30*
- [4] *The Ayurvedic Formulary of India, part 1, Government of India, Ministry of Health and Family Welfare. Department of Indian system of Medicine & Homeopathy new Delhi:2003*
- [5] <https://www.medicalnewstoday.com/articles/318591.php>.
- [6] *Prof. P V Sharma dravyaguna vigyan, part 2 Delhi; chaukhamba bharti academy,2013*

- [7] Tripathi B, sharanghar samhita purva khanda, Delhi Chaukhambha surbharti 2000, chp 7; pg no:160.
- [8] Bhavpraksh madhyamkhanda chikitsa 70/47
- [9] Bhavprakash madhyam khanda yonirogadhikara 70/49
- [10] <https://www.researchgate.net/publication>
- [11] Antimicrobial activity of *Acorus calamus* L. rhizome extract and its total flavonoid and phenolic contents Cite as: AIP Conference Proceedings 2155, 020054 (2019); <https://doi.org/10.1063/1.5125558>
Published Online: 06 September 2019
Wiwik Susanah Rita, I. Made Dira Swantara and Gusti Ayu Primandani Utami
- [12] Samaneh Rahamoz-Haghighi; Antibacterial effect of *Acorus calamus* extractions against gram positive and negative bacteria
Journal homepage: [Http://js.kgut.ac.ir](http://js.kgut.ac.ir)
- [13] Pratibha Rawal, R.S.Adhikari, K.Danu and A.Tiwari. Antifungal activity of *Acorus calamus* against *Fusarium oxysporum* f. sp. lycopersici Kumaun University Nainital, Botany Department, L.S.M. Govt. P.G. College Pithoragarh, Uttarakhand, India Botany Department, M.B.P.G. College, Haldwani, Uttarakhand, India. Int.J.Curr. Microbiol.App.Sci (2015) 4(1): 710-715 710 O
- [14] V. Duraipandiyan, N. A. Al-Dhabi, C. Balachandran, Antimicrobial, Antioxidant, and Cytotoxic Properties of Vasicine Acetate Synthesized from Vasicine Isolated from *Adhatoda vasica* L.
- [15] Josephin Sheeba, B, Selva mohan; Antimicrobial activity of *adhatoda vasica* against clinical pathogens; Asian Journals of plant Science and research, 2012, 2(2): 83-88
- [16] Hariti M, Rathee PS. Antifungal activity of the unsaponifiable fraction of the fixed oil of *Trichosanthes* seeds. Asian J Chem 1996;8:180-2.
- [17] Hariti M, Rathee PS. Antibacterial activity of the unsaponifiable fraction of the fixed oil of *Trichosanthes* seeds. Asian J Chem 1995;7:909-11.
- [18] Gupta Vikas, Pagoch s s; Phytopharmacological review of *trichosanthes dioica* (patola

-);international ayurvedic medical journal;ISSN;23205091
- [19] . Pandey ajay Shankar ,srivastava bhavana ,CALLICARPA MACROPHYLLA;Areview of its phytochemistry,pharmacology,folklore claims and ayurvedic studies;volume3;march2014;91-100
- [20] Nitin Kumar, Satyendra Singh, Manvi, and Rajiv Gupta; *Trichosanthes dioica* Roxb.: An overview; . Pharmacogn Rev. 2012 Jan-Jun; 6(11): 61–67. PMID: 22654406
- [21] Virendra Yadav, Soma Jayalakshmi, Rajeev K Singla, Arjun Patra, Salim Khan. Assessment of anti-inflammatory and analgesic activities of *Callicarpa macrophylla* Vahl. roots extracts. Webmedcentral Pharmacology. 2012; 3(5): WMC003366.
- [22] Ali Esmail Al-Snafi University of Thi-Qar The pharmacological activities of Cuminumcyminum- A review Article <https://www.researchgate.net/publication/313742829> July 2016
- [23] Burt S. Essential oils: Their antibacterial properties and potential applications in foods: A review. *Int J Food Microbiol.* 2004; 94: 223–53. [PubMed] [Google Scholar]
- [24] Kamaleeswari M, Nalini N. Dose-response efficacy of caraway on tissue lipid peroxidation and antioxidant profile in rat colon carcinogenesis. *J Pharm Pharmacol.* 2006b;58:1121–30. [PubMed] [Google Scholar]
- [25] Thakur S, Bawara B, Dubey A, Nandini D, Chauhan N, Saraf DK. Effect of *Carum carvi* and *Curcuma longa* on hormonal and reproductive parameter of female rats. *Int J Phytomed.* 2009;1:31–8. [Google Scholar]
- [26] Sharma A and singh R screening of anti-inflammatory activity of certain indigeneous drug oncarrageenin induced hind paw odema in rats,bull,med ethnobot res 1980;2:262
- [27] Rao C and Nigam s. Antimicrobial activity of essential oils;Indian J Pharm 1968;30:150
- [28] Bhargava A and Chauhan C .Antibacterial activity of essential oils,Indian J Pharm 1968;30:150
- [29] Nagasawa H, Watanabe K, Inatomi H et al. “Effects of bitter melon (*Momordica charantia*) or ginger

rhizome (*Zingiber officinale* Rosc.)
on spontaneous mammary
tumorigenesis in SHN mice.” Am J
Clin Med., 2002; 30(2-3): 195-205.

[30] Sophon, R., P. Amorn, S.
Thianiyavarn, P. Surachai, K.
Suntree, 1997. Antibacterial activity
of some essential oil. Journal
Science Research Chalalongkorn,
22: 13-19.

[31] Fatimah A. Agili Chemical
Investigation and Antimicrobial
Activity of Essential Oil from
Carum roxburghianum ;Australian
Journal of Basic and Applied
Sciences, 7(2): 723-727, 2013 ISSN
1991-8178.