



TO STUDY IN-VITRO ACTION OF PANCHAVALKAL KWATH AND ITS INGREDIENTS WITH CULTURE & SENSITIVITY TECHNIQUE IN LEUCORRHIC PATIENTS WITH SPECIAL REFERENCE TO SHWETAPRADARA

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Abstract

Leucorrhoea or *Swetapradara* is one type of vaginal discharge. It is a common complain of women who were coming for medical consultation. It was characterized by White discharge per vagina sometimes with itching. This is very usual in developing countries like India where unhygienic condition, Stressful modern life styles, Food Habits, Social status. It is frequent problem which affect women during reproductive age. There are so many formulations which are usefull in Swetapradara on the basis of experience out of those preparations Panchavalkal Kwath has been selected for *Yoniprakshalan* in *Swetpradar*. *Panchavalkala* has been explained in *Bhavprakash*. *Panchavalkala* includes a group of five drugs; these are *Vata* (F. benghalensis L.), *Udumbara* (F. racemosa L.), *Ashwatha* (F. religiosa L.), *Plaksha* (F. lacorBuch. Ham.), *Parisha* (T. populnea). The main objective of this research is “To study In-vitro action of *Panchavalkal kwath* and its ingredients with Culture & Sensitivity technique in leucorrhic patients with special reference to *Shwetapradara*.” In-vitro study with Culture & Sensitivity technique to know the antibacterial activity against the different infected swabs of vaginal discharge, which carried out in microbiology laboratory of Parul Institute of Applied Sciences. Agar well diffusion method was followed to assess the antibacterial activity on different infected samples and the zone of inhibition were analysed on the standard protocol of experimental study. It was observed that those samples which are containing different types of bacteria had shown the clear inhibition zone which proved a good antibacterial activity against collected samples. All the samples were found grade 2 to grade 3 sensitivity against *Panchavalkal Kwath*.

Keywords: Leucorrhoea, *Shwetapradara*, *Panchavalkal kwath* in combination, *Vat*, *Udumbar*, *Ashvatha*, *Parisha (Pipal)*, *Plaksha*, Nutrient agar, Culture & sensitivity, Sterile swab culture.

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Introduction

A healthy woman is a promise of healthy family. Women's health status is a complex arrangement controlled by a range of factor healed by her reproductive system. Women are not given much attention towards her problem unless and until it will make the patient feel uncomfortable in their day to day life. As they pay more attention towards family and because of this Negligence, women often suffer with health problems. In all classics *Shwetapradara* or *Leucorrhoea* is not a disease but symptom of so many diseases.¹ The word *Swetapradara* has not mention in *Charak*, *Surashrut*, *Vagbhatta samhitas*. Comentater *Chakrapani*, *Sharangadhara Samhita*, *Bhavaprakash*, *Yogaratanakara* have used the word *Swetapradara* for white vaginal discharge.² *Swetapradara* is a Symptom of all gynaecological disorders developing due to vitiation of *Kapha* and *Vatakapha Dosha*.³ Hence *Swetapradara* is symptom of many *Yonivyapada* like *Kaphaj Yonivyapd*, *Sannipataj Yonivyapad*, *Uplupta Yonivyapd*, *Karnini Yonivyapad*, *Acharna Yonivyapad*, *Aticharana Yonivyapad*, *Atyananda Yonivyapad*.^{4,5} *Leucorrhoea* or *Shwetapradara* characterized by white vaginal discharge , Sometimes it is associate with *Yonigat Kandu* (Itching around vulva) *Trik sandhi Shula* (lower back pain).

Normally vaginal discharge occurs in regular variation in amount during different phases like Menstrual cycle, Pregnancy, Lactation, postmenopausal etc. It may be physiological or pathological. It is characterized by normal discharge, although white or dull white when fresh, it dries to leave a brownish yellow stain on clothing. Pathological leucorrhoea is caused by OCP pill use, vaginal adenosis, chronic cervicitis, candidiasis, bacterial vaginitis, endometriosis etc.⁶ The other factor is hormonal imbalance which affects physiological Vaginal pH and causes excessive white Vaginal discharge called as *Leucorrhoea*.⁷ *Panchavalkal* is one of the ideal combinations of drugs which is used for *Yoniprakshalan* or *Yonidhavana* in patients of *Swetapradara* or leucorrhoea. *Panchvalkal* is explained in *Bhavaprakasha Nighantu* in *Vatadi Varga*. *Panchavalkal*, a combination of five strong drugs called, *Vata (Ficus bengalensis)*, *Udumbara (Ficus glomerata.)*, *Ashvatha (Ficus religiosa)*, *Parisha (Thespesia populanea)*, *Plaksha (Ficus lacor)*, is one of the great combinations.⁸ The all five ingredients of *Panchavalkal* having *Kashaya Rasa*, *Ruksha Guna* and *Kapha Pitta Shamaka*. So, It is having properties like *Vranaropana* (Wound healing), *Shothahara*(Anti-inflammatory), *Graahi*, *Yonidoshahara*, *Visarpahara*, *Vedanasthapan* (Pain reliever), *Stambhana* (stripping action), *Raktashodhak* (hemostatic),

Materials:-

Inclusion Criteria: - Patients of 18-60 years of age, married women,
Patients with symptoms like *Yonitah shweta strava*,
Yonitah Kandu, *Trika sandhi shoola*,

Exclusion Criteria: - Pregnancy, Unmarried women, Lactating women, Malignancy.

Null Hypothesis: - There is no any effectiveness of *Panchavalkal kwath* ingredients in combination and individually in in-vitro study with culture and sensitivity technique in patients *Swetapradara* or leucorrhoea.

Alternative Hypothesis: - There is effectiveness of *Panchavalkal kwath* ingredients in combination and individually in in-vitro study with culture and sensitivity technique in patients of *Swetapradara* or leucorrhoea.

Methods: -

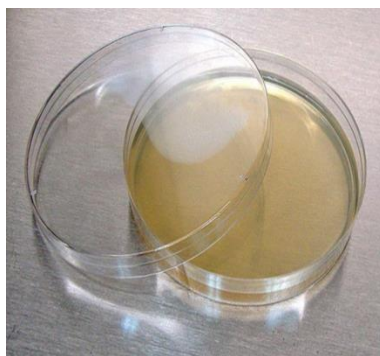
Collection of sample:

- Take diagnosed patients with symptoms of *Shwetapradara*.
- Advise patient to go for urination.
- Trap the area for sample collection with the help of sterile instrument like Sim's speculum Double blade with anterior vaginal wall retractor, or Cusco's speculum.
- Patient in lithotomy with leg spread position, collect swab from Squamocolumnar junction at cervix.
- Rotate a swab 360° once to obtain a single sample.
- Then embedded it in normal sterile tube than transfer it to culture laboratory in Bio hazardous bag.

Freshly 25 sample of white discharge from patients of *Swetapradara* or *Leucorrhoea* was taken before 2hrs and kept it in sterile swab with plastic test tube.

Media preparation⁹:-

- 85 gram Hinton agar powder taken in large autoclaved sterile conical flask and well dissolved in 3 liter of distilled water.
- Mixture was heated stirred to fully dissolve all components to get homogeneous mixture.
- This mixture was autoclaved at 121°C temp. & 15lbs pressure for 20 minutes. (Pandey A, 2022,11(3))
- Further after taking out from autoclave chamber then checked it for homogenous mixture.
- Mixture was poured on sterile glass Petri dish and waited till well solidifying of the agar on dish.
- Collected Swabs were directly streaked on agar plates. [Figure 2]



[Figure 1]

[Figure 2]

[Figure 3]

Drug Preparation:

Kwath was prepared from these five ingredients individually and other with all these five combination in same proportion. *Kwath* is prepared by taking one part of *Dravya Churna* mixed with eight part of water in an earthen pot and boiled over *mridu Agni* Till the liquid reduced to fourth part.¹⁰ All these six sample was kept in room temperature.

Procedure

of

sampling:

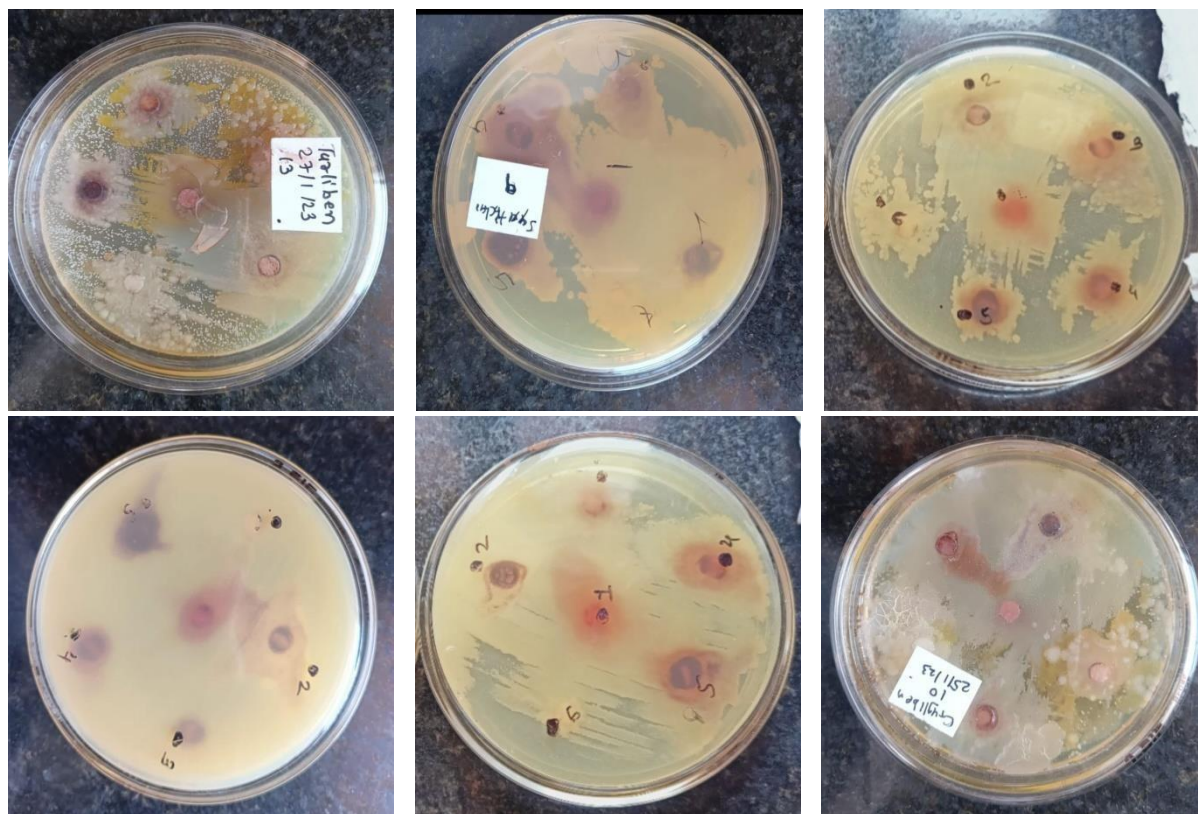
A small piece of filter paper is deep in prepared six samples of *Kwath* one by one and it was placed on the Hinton agar plate at specific distance with the help of autoclaved forcep. (This whole procedure from preparation of agar plate, streaking of wound swab on Hinton agar plate till dipping of all six *Kwath* on streaked petri dish was performed carefully in Laminar Air Flow. [Figure 1]).

Incubation of prepared plates:

After completion this procedure all plates were kept in bacteriological incubator on 37°C for 24 hours which provides favourable environment growth of spreaded samples. After the incubation, plates were observed for zone of inhibition around the place of sample.



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(Observation of antibacterial activity after 24 hour)

Observations:

Antibacterial effect of *Panchavalkal Kwath* and its ingredients were observed on Hinton agar plate on different 25 sample of vaginal discharge. After incubation of the samples on first day observation was done where bacterial growth was not clearly visible, But antibacterial activity and inhibition zone was observed which was measured with help of centimeter scale. The measurement was observed in millimetre.

RESULTS AND DISCUSSION:

Antibacterial sensitivity was performed for sample of decoction of *Vata*, *Udumbara*, *Ashvatha*, *Plaksha*, *Parish Pipal* and *Panchavalkal* in combination by well diffusion method. In this study zone of inhibition of the above all six drug sample was assessed.

Table – 1: Descriptive statistics

Drug No.	Drug Name	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
1	<i>Vata</i>	25	19.96	4.178	0.836	18.24	21.68	14	30
2	<i>Udumbara</i>	25	18.24	3.099	0.620	16.96	19.52	13	25
3	<i>Ashvatha</i>	25	18.96	3.846	0.769	17.37	20.55	14	29
4	<i>Plaksha</i>	25	17.80	3.731	0.746	16.26	19.34	12	26

5	<i>Parish Pipal</i>	25	6.24	1.268	0.254	5.72	6.76	4	8
6	<i>Panchavalkal</i> (combination of all 5)	25	21.20	3.266	0.653	19.85	22.55	17	28

The Mean of zone of inhibition in 25 infected samples of leucorrhoea was measured for all above six drug samples. The Zone of inhibition of *Vata* is 19.96mm, *Udumbara* is 18.24, *Ashvatha* is 18.96, *Plaksha* is 17.80 and *Parish* is 6.24. The combination of all five *Panchavalkala* shows the maximum zone of inhibition is 21.20.

Repeated Measurement ANOVA

Table – 2:

Tests of Within-Subjects Effects							
Measure:	MEASURE_1						
Source		Type III Sum of Squares	df	Mean Square	F	P value ($\alpha = 0.05$)	Partial Eta Squared
Drugs	Sphericity Assumed	3704.293	5	740.859	84.479	0.000 (HS)	0.779
	Greenhouse-Geisser	3704.293	4.055	913.407	84.479	0.000 (HS)	0.779
	Huynh-Feldt	3704.293	4.983	743.363	84.479	0.000 (HS)	0.779
	Lower-bound	3704.293	1.000	3704.293	84.479	0.000 (HS)	0.779
Error (Drugs)	Sphericity Assumed	1052.373	120	8.770			
	Greenhouse-Geisser	1052.373	97.331	10.812			
	Huynh-Feldt	1052.373	119.596	8.799			
	Lower-bound	1052.373	24.000	43.849			

For within subject effect F – statistic value is 87.475 with p – value 0.000 which is less than 0.05 (significance Level)

Table – 3:

Tests of Within-Subjects Contrasts							
Measure:	MEASURE_1						
Source		Type III Sum of Squares	Df	Mean Square	F	p – value ($\alpha = 0.05$)	Partial Eta Squared
Drugs	Linear	342.329	1	342.329	33.203	0.000 (HS)	0.580
	Quadratic	349.738	1	349.738	35.337	0.000	0.596

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						(HS)	
	Cubic	1249.254	1	1249.254	189.938	0.000 (HS)	0.888
	Order 4	1518.516	1	1518.516	264.325	0.000 (HS)	0.917
	Order 5	244.457	1	244.457	21.596	0.000 (HS)	0.474
Error (Drugs)	Linear	247.442	24	10.310			
	Quadratic	237.536	24	9.897			
	Cubic	157.852	24	6.577			
	Order 4	137.877	24	5.745			
	Order 5	271.666	24	11.319			

p –value is less than 0.05 (Significance Level) which is significant.

Table – 4:

Pairwise Comparisons							
Measure:	MEASURE_1						
(I) Drugs		Mean Difference (I-J)	Std. Error	p –value ($\alpha = 0.05$)	Result	95% Confidence Interval for Difference	
						Lower Bound	Upper Bound
1(Vata)	2	1.720	0.720	0.377	NS	-0.626	4.066
	3	1.000	0.990	1.000	NS	-2.226	4.226
	4	2.160	1.063	0.799	NS	-1.302	5.622
	5	13.720*	0.905	0.000	HS	10.772	16.668
	6	-1.240	0.870	1.000	NS	-4.076	1.596
2 (Ashvatha)	1	-1.720	0.720	0.377	NS	-4.066	0.626
	3	-0.720	0.720	1.000	NS	-3.066	1.626
	4	0.440	0.857	1.000	NS	-2.351	3.231
	5	12.000*	0.678	0.000	HS	9.790	14.210
	6	-2.960*	0.634	0.000	S	-5.025	-0.895

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				1			
3(<i>Udumbara</i>)	1	-1.000	0.990	1.00 0	NS	-4.226	2.226
	2	0.720	0.720	1.00 0	NS	-1.626	3.066
	4	1.160	1.019	1.00 0	NS	-2.161	4.481
	5	12.720*	0.780	0.00 0	HS	10.178	15.262
	6	-2.240	0.859	0.23 1	NS	-5.038	0.558
4(<i>Plaksha</i>)	1	-2.160	1.063	0.79 9	NS	-5.622	1.302
	2	-0.440	0.857	1.00 0	NS	-3.231	2.351
	3	-1.160	1.019	1.00 0	NS	-4.481	2.161
	5	11.560*	0.860	0.00 0	HS	8.757	14.363
	6	-3.400*	0.759	0.00 2	S	-5.874	-0.926
5(<i>Parish Pipal</i>)	1	-13.720*	0.905	0.00 0	HS	-16.668	-10.772
	2	-12.000*	0.678	0.00 0	HS	-14.210	-9.790
	3	-12.720*	0.780	0.00 0	HS	-15.262	-10.178
	4	-11.560*	0.860	0.00 0	HS	-14.363	-8.757
	6	-14.960*	0.711	0.00 0	HS	-17.275	-12.645
6(<i>Panchavalkal</i>)	1	1.240	0.870	1.00 0	NS	-1.596	4.076
	2	2.960*	0.634	0.00 1	S	0.895	5.025
	3	2.240	0.859	0.23 1	NS	-0.558	5.038
	4	3.400*	0.759	0.00 2	S	0.926	5.874
	5	14.960*	0.711	0.00 0	HS	12.645	17.275
Based on estimated marginal means							

*. The mean difference is significant at the 0.05 level.

In pairwise comparison we can conclude that from the table – 5, Drug – 6 (*Panchavalkal*) was most effective drug out of all 6. Also, Drug – 5 (*Parish Pipal*) has least effect out of all 6 drugs. There is no significance difference in the effect of drug – 1 (*Vata*) and drug – 6 *Panchavalkal* (combination of all 5). There is highly significant difference in the effect of drug 5(*Parish Pipal*) and other four drugs like *Vata*, *Ashvatha*, *Udumbara*, *Plaksha*.

Table – 6: Friedman Test (Non – Parametric ANOVA)

(Placeholder1)	Mean Rank	Chi - Square	Df	p – value ($\alpha = 0.05$)
Vata	4.28	66.11	5	0.000 (HS)
Udumbar	3.48			
<i>Ashvatha</i>	3.92			
Plaksha	3.42			
Parish Pipal	1.00			
Panchavalkal (combination of all 5)	4.90			

Mean rank for *Panchavalkal* is highest 4.9, followed by *Vata* 4.28. Test statistic value is 66.11 with 5 degree of freedom and p – value 0.000 which is less than 0.05 (significance level). i.e., there is significance difference in the effect of all 6 drugs.

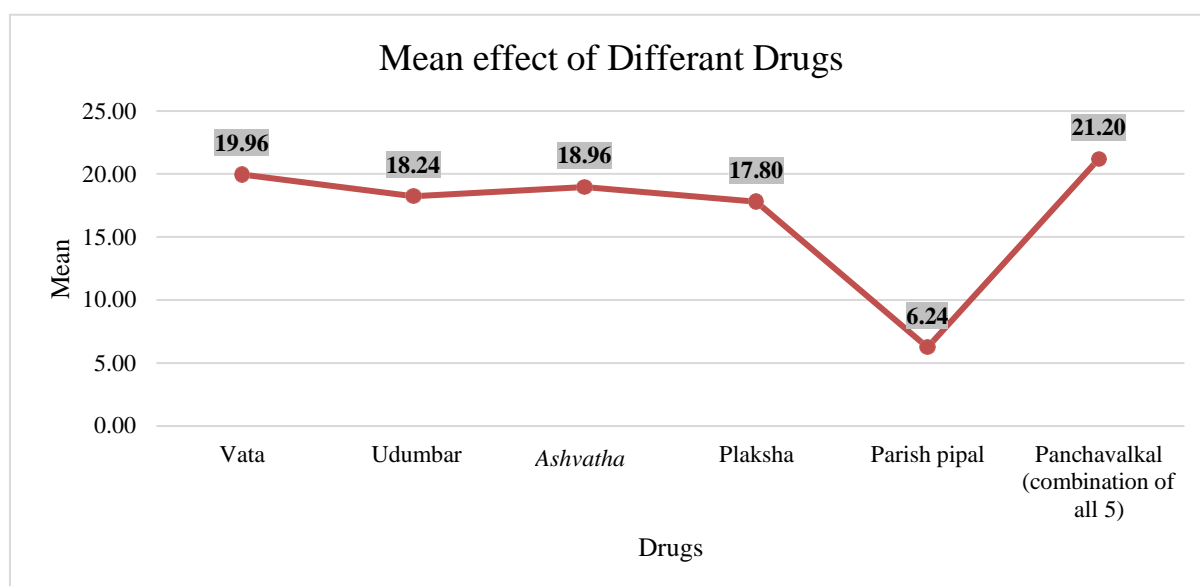


Diagram – 1 showing the comparison between mean effect by different drugs.

Panchavalkal is one of the frequently used combination therapies described in Ayurveda. *Panchavalkal* and its individual ingredients are explained by *Bhavprakash Nighantu* and *Kaiyadev Nigantu*. Ficus plants from *Panchavalkal* are of *Kashay Rasatmka*, *Sheeta Virya* and *Kapha*, *Pittadoshahara*. Phytopharmacologically, Ficus plants of *Panchavalkal* produces a number of natural bioactive compounds and phytochemical screening also shows glycosides, flavons, triterpenes, tiglic acid esters, phenols, tannins, leucoanthocyanins,

stigmasterol, lupeol, saponin and triterpenoids, etc.¹¹ which have antibacterial, anti-inflammatory effect. Many of the existing traditional antibiotics cause drug resistance and various side effects, therefore plant based drugs will encounter a new approach of treatment, so it can be replaced by decoction of *Panchvalkal* for the *Yoniprakshalana* in *Shwetpradara* or leucorrhoea.

CONCLUSION:

In this experiment *Panchvalkal kwath* is a classical formulation of Ayurvedic medicine and its ingredients' decoction was assessed for antibacterial effect. In this study we can see that *Panchavalkala* (combination of all 5) has highest mean effect 21.20 followed by *Vata* 19.96. Where *Parish Pipal* had least mean effect 6.24. The study concludes that *Panchavalkal* showed more antibacterial activity than its ingredients. Here, there was one ingredient *Parish Pipal* which not shown antibacterial effect. Remain four drugs (*Vata*, *Ashvatha*, *Udumbara*, *Plaksha*) of *Panchavalkal* combination of either two or three can also be used for the local application if all four are not available. *Trichomonas vaginalis* is a leading opportunistic pathogen in females, it causes leucorrhoea and other vaginal infections so as per this in vitro study this decoction might use as a preventive and cure medicine.

References

1. Prof. Premvati Tiwari, Ayurvediya Prasutitantra Evam Striroga volume 2 Streeroga, Chokhmbha Orientalia, p.266
2. Prof. Banwarilal Gaur, Charaka Samhita Chakrapani Tika Volume 4, Rashtriya Ayurveda Vidyapeeth, Delhi, p. 502
3. Prof. Premvati Tiwari, Ayurvediya Prasutitantra Evam Striroga volume 2 Streeroga, Chokhmbha Orientalia, p.268
4. Gayatri Devi, Streeroga Vijnan Made easy, Chaukhamba Sanskrit Pratisthan, Delhi. P. 207
5. Dr. Hemlatha Kapoorchand, A comprehensive Treatise on Strirega, Chokhmbha Vishvabharati, p. 658
6. Dr. Hemlatha Kapoorchand, A comprehensive Treatise on Strirega, Chokhmbha Vishvabharati, p. 662

7. Kavitha Sharma, Study of Panchavalkal Kasaya In Vaginal Discharge W.S.R To Antimicrobial Properties, IJAPR | April 2018 | Vol 6 | Issue 4
8. Prof. D. Shanthkumar lucas, Bhavaprakash Nighantu, Chokhmbha Vishvabharati, p. 295
9. Pandey A¹, Jaiswal S², Dahilekar Sg³ And Dave O⁴, International Journal of Biology, Pharmacy and Allied Sciences (IJBPAS) , March, Special Issue, 2022, 11(3): 302-308
10. Dr. G. Prabhakar Rao, Sharangdhara Samhita, Chaukhambha Publications new Delhi, p. 71
11. Kamal Satgonda Naik1*, Rajkumar B. Gupta2 Comparative in vitro antimicrobial study of Panchavalkal and modified Panchavalkal in three different extract solvents: a study protocol. International Journal of Advances in Medicine Naik KS et al. Int J Adv Med. 2022 Jul;9(7):825-829