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Research Article

A STUDY ON DIFFERENT TYPES OF *MUTRAKRICCHA VYADHI* WITH SPECIAL REFERENCE TO URINE CULTURE EXAMINATION

Akshay Kalita[1]*, Hemen Kalita[2]

*[1]P.G.Scholar, [2]Assistant Professor, Dept. of Roga Nidan, Govt. Ayurvedic College & Hospital, Jalukbari, Guwahati, Assam, India.

ABSTRACT

Mutrakriccha is one of the disease found in about all Ayurvedic Classics where a patient experiences painful and discomfort micturition. *Mutrakriccha* is of eight types having different signs and symptoms. It can be correlated with dysuria which have two main causes, infective and obstructive, but the most commonest cause is infection. This work has been done to establish any relation of *Mutrakriccha vyadhi* with urine culture examination and to specify the relationship between any micro-organism with its different types. For the study 100 numbers of patients were clinically diagnosed as *Mutrakriccha vyadhi* and was investigated for urine culture examination. Finally a conclusion has been drawn showing the relationship of *Mutrakriccha vyadhi* and its types with pathogenic organism.

KEYWORDS: *Mutrakriccha*, *Dysuria, Urine culture*.

INTRODUCTION

Mutrakriccha is one of the disease elaborately explained in all major Ayurvedic Classics. The *Samanya lakshana* of *Mutrakriccha* is *"Dukheno prabritti"* [1] which means pain and discomfort during micturition. As per the Ayurvedic classics, *Mutrakriccha* are of eight types.[2]

These are 1. *Vataja* 2. *Pittaja* 3. *Kaphaja* 4. *Sannipataja* 5. *Shalya abhighataja* 6. *Sakridvighataja* 7. *Asmarija* 8. *Sukraja.*

Mutrakriccha can be correlated with dysuria. *Dysuria* defined as pain, burning or discomfort on urination[3]. The causes of dysuria are mainly infective and obstructive. The commonest cause of dysuria is urinary tract infection and most common pathogenic organism are Escherichia Coli (in 90% of cases) followed by Enterobacter, Klebsiella, Pseudomonas and Proteus.[4]

Obstruction in the urinary tract is the other important because it increases the susceptibility of infection and stone formation. Obstruction can occur at any age and in either sex. The cause of obstruction are mainly renal calculi, any tumour, prostate enlargement etc and may lie at any level of the urinary tract – renal pelvis, ureter, urinary bladder and urethra.[5] In conventional system of medicine, different types of antibiotics are used to cure a case of UTI according to the sensitive micro-organism. Use of all these seems to be sometimes difficult for their noted adverse effect. But in Ayurveda, a numbers of *Yogas* like herbo-mineral compound, single herbs etc are used to treat the various types of *Mutrakriccha*. But relationship of any micro-organism with *Mutrakriccha* is yet to be established till date.

So a scientific study is essential to establish the relation of *Mutrakriccha Vydhi* with urine culture examination and to specify the relationship between any micro-organism with different types of *Mutrakriccha*.

AIMS AND OBJECTIVES

a) To observe and establish the relation between different types of *Mutrakriccha* and Urine culture examination.

b) To specify the relationship between any micro-organism with different types of *Mutrakriccha*.

1) MATERIALS & METHOD

The study was conducted at Govt. Ayurvedic College and Hospital, Guwahati 14, Assam, India under strict protocol to prevent bias & reduce the error in study.

(a) Sample Size

The study was performed in 100 patients of *Mutrakriccha Vyadhi*.

(b) Selection of Patients

All the patients was randomly selected from –

1) Central laboratory Govt. Ayurvedic College and Hospital, Guwahti-14, Assam.
2) OPD & IPD of Govt. Ayurvedic College and Hospital, Guwahti-14, Assam.

(c) Inclusion criteria

1) Patient having *Lakshanas* of *Mutrakriccha vyadhi* as per Ayurvedic Classic was included under the study.
2) All age group who can present their sign and symptoms of *Mutrakriccha* irrespective of any sex, community and locality was included for the study.

(d) Exclusion criteria

1) Known patient of Seropositive for HIV, HB_sAg, HCV etc. was excluded.

Routine Examination & Assessment

1. The full details of history, physical examination and systemic examination of all the selected patients was recorded in specially designed proforma to diagnose different types of *Mutrakriccha vyadhi* according to Ayurvedic Classics was done.
2. All the selected patient was investigated for Urine culture examination in common culture media like Cled Agar, Mac Conkey agar etc.
3. A minimum of 24 hr incubation of urine culture was done and finally the cultural characteristics of the organism was observed for identification, if any growth found.

Assessment criteria [6,7,8,9,10]

1. Selection of the patient was done on the basis of *Samanya Lakshanas* of *Mutrakriccha vyadhi* as mentioned in classics.
2. Every growth was observed for its particular morphological characteristics.
3. Every growth was stained by gram stain method to indentify the gram positive and negative bacteria.
4. Every growth was examined by IMViC biochemical test to identify the organism.
5. For identification of some organisms Coagulase and Oxidase test was examined.

Observation and statistical analysis

Data of subjective and objective parameters were tabulated and analysed using appropriate statistical tools.

Table 1: Prevalence of different types of *Mutrakriccha*

Type of *Mutrakriccha*	No of patients	Percentage
Vataja Mutrakriccha	13	13%
Pittaja Mutrakriccha	59	59%
Kaphaja Mutrakriccha	10	10%
Sannipataja Mutrakriccha	06	6%
Asmarija Mutrakriccha	02	2%
Sukraja Mutrakriccha	03	3%
Sakritvighataja	05	5%
Shalyabhighataja	02	2%

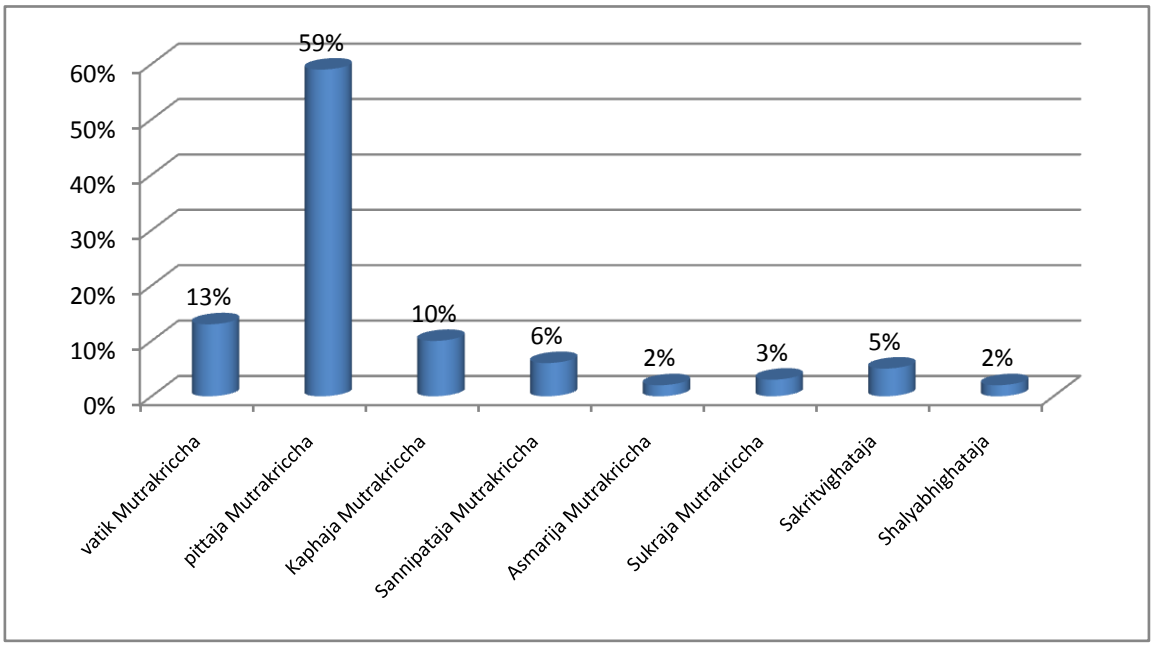

Figure 1: Prevalence of different types of *Mutrakriccha* (n=100)

Table 2: Percentage of growth in urine culture out of 100 patients

Urine culture	No of observation	Percentage
Growth present	30	30%
Growth absent	70	70%

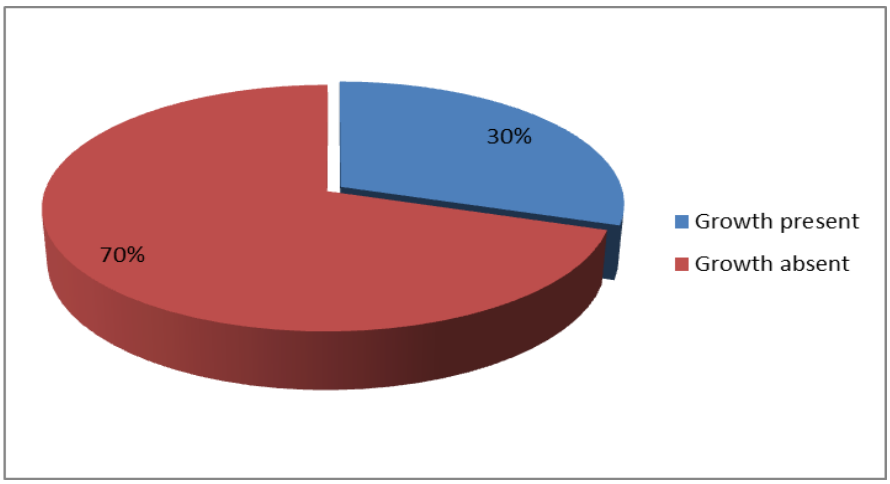

Figure 2: Percentage of growth in urine culture (n=100)

Table 3: Prevalence of different organisms in culture growth

Name of the organism	No of observation	Percentage
E-Coli	16	53.33%
Klebsiella species	03	10%
Staphylococcus aureous	06	20%
Pseudomonas aeruginosa	04	13.33 %
Citrobacter ferrandi	01	3.33%

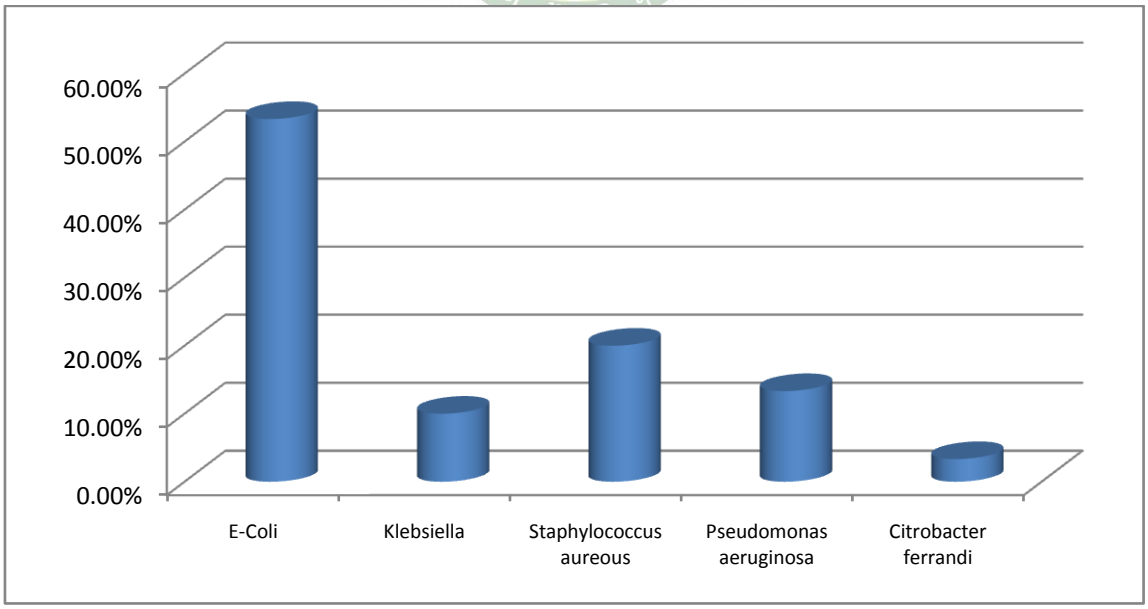

Figure 3: Prevalence of different organisms in culture growth (n= 30)

Table 4: percentage of growth in *Vataja Mutrakriccha*

Urine culture	No of observation	Percentage
Growth present	02	15.38%
Growth absent	11	84.62%

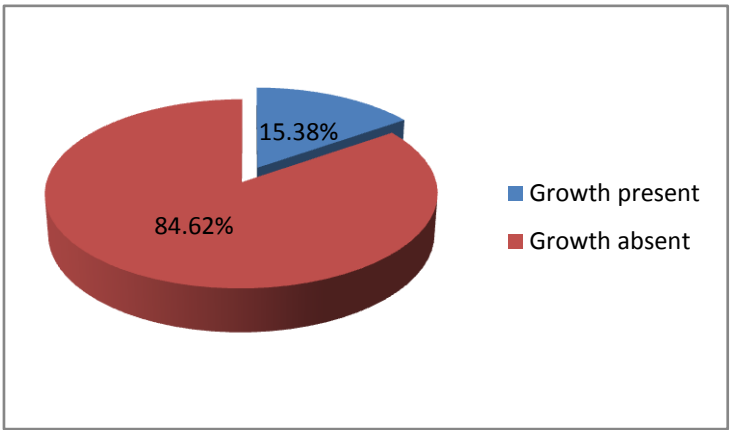

Figure 4: Percentage of growth in *Vataja Mutrakriccha* (n=13)

Table 5: Percentage of growth of different organism in *Vataja Mutrakriccha*

Name of the organism	No of observation	Percentage
E-Coli	02	100%
Klebsiella species	0	0%
Staphylococcus aureous	0	0%
Pseudomonas aeruginosa	0	0 %
Citrobacter ferrandi	0	0%

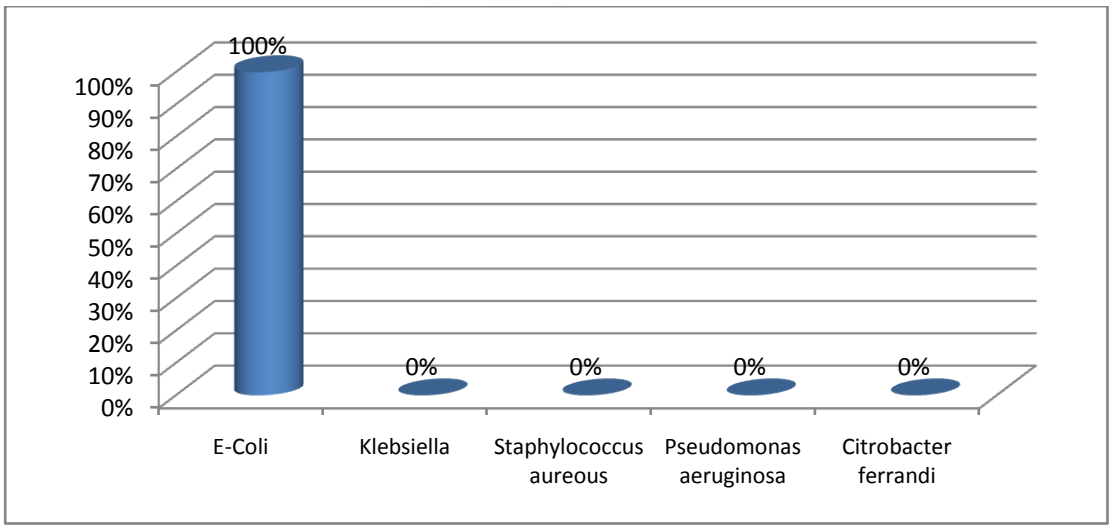

Figure 5: Percentage of growth of different organism in *Vataja Mutrakriccha* (n=2)

Table 6: Percentage of growth in *Pittaja Mutrakriccha*

Urine culture	No of observation	Percentage
Growth present	20	33.89%
Growth absent	39	66.10%

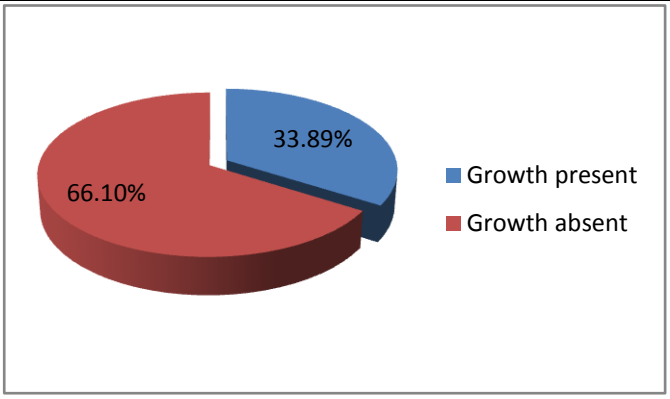

Figure 6: percentage of growth in *Pittaja Mutrakriccha* (n=59)

Table 7: Percentage of growth of different organism in *Pittaja Mutrakriccha*

Name of the organism	No of observation	Percentage
E-Coli	09	45 %
Klebsiella species	03	15 %
Staphylococcus aureous	04	20 %
Pseudomonas aeruginosa	04	20 %
Citrobacter ferrandi	0	0%

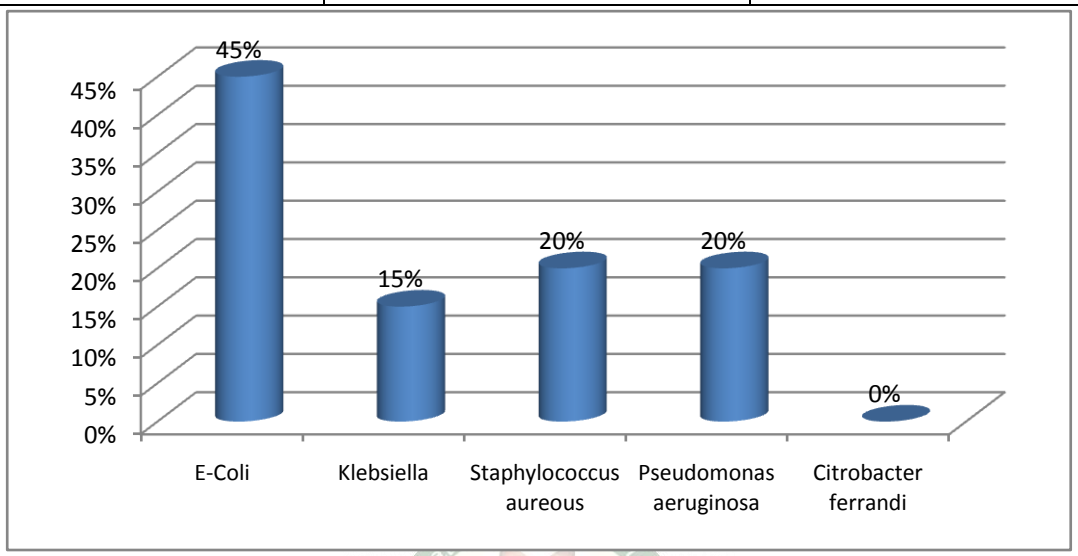

Figure 7: Percentage of growth of different organism in *Pittaja Mutrakriccha* (n= 20)

Table 8: Percentage of growth in *Kaphaja Mutrakriccha*

Urine culture	No of observation	Percentage
Growth present	01	10%
Growth absent	09	90%

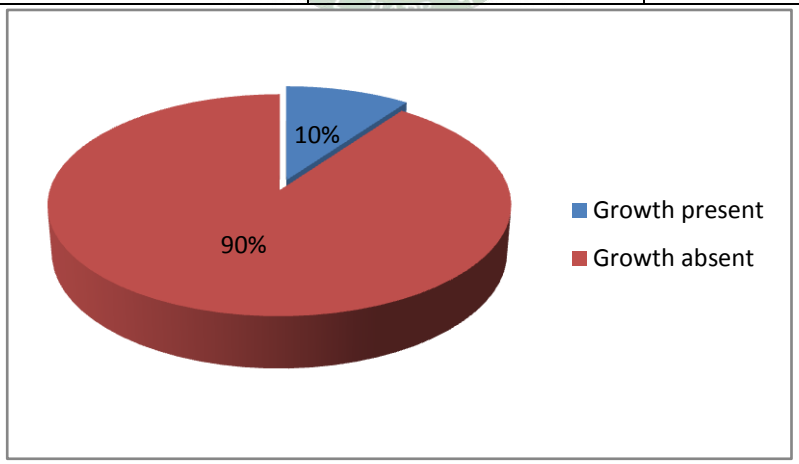

Figure 8: Percentage of growth in *Kaphaja Mutrakriccha* (n= 10)

Table 9: Percentage of growth of different organism in *Kaphaja Mutrakriccha*

Name of the organism	No of observation	Percentage
E-Coli	01	100%
Klebsiella species	0	0%
Staphylococcus aureous	0	0%
Pseudomonas aeruginosa	0	0 %
Citrobacter ferrandi	0	0%

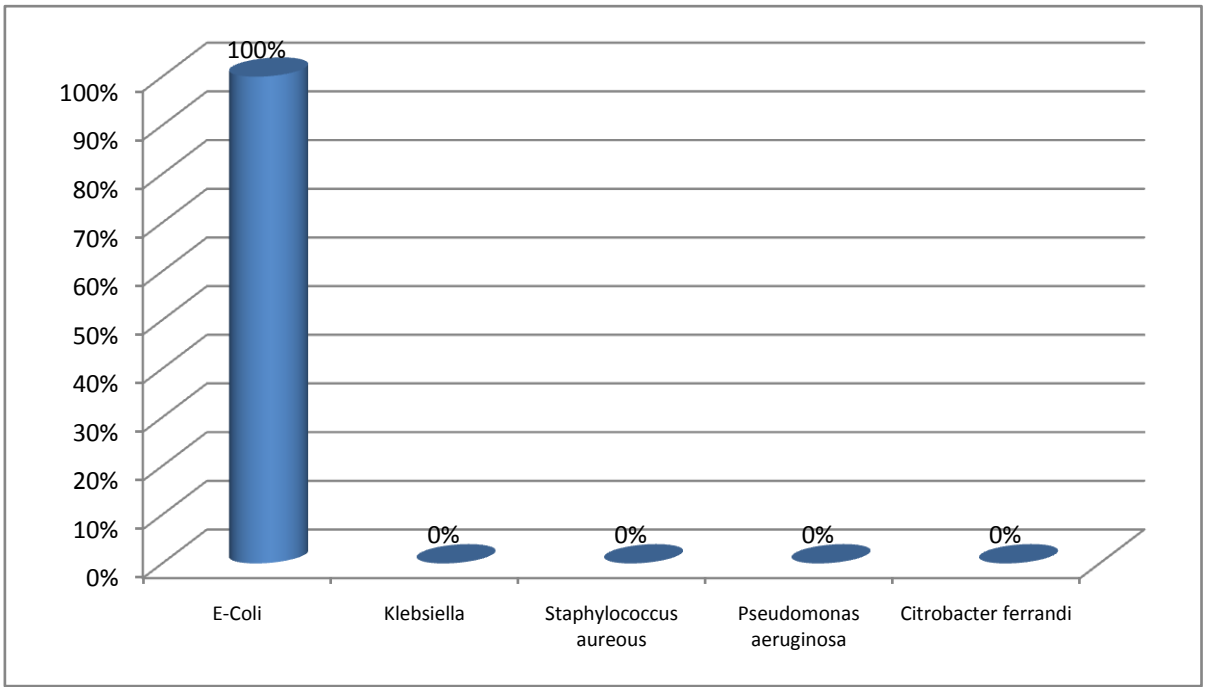

Figure 9: Percentage of growth of different organism in *Kaphaja Mutrakriccha* (n=1)

Table 10: Percentage of growth in *Sannipataja Mutrakriccha*

Urine culture	No of observation	Percentage
Growth present	04	66.66%
Growth absent	02	33.33%

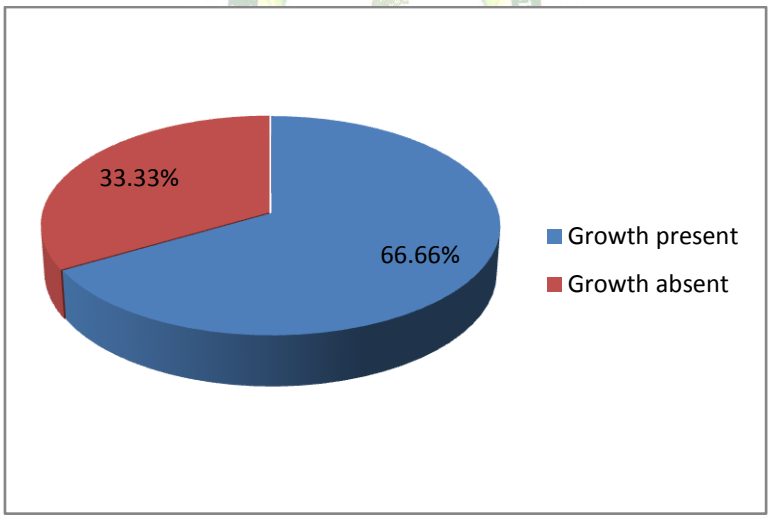

Figure 10: Percentage of growth in *Sannipataja Mutrakriccha* (n=6)

Table 11: Percentage of growth of different organism in *Sannipataja Mutrakriccha*

Name of the organism	No of observation	Percentage
E-Coli	02	50%
Klebsiella species	0	0%
Staphylococcus aureous	02	50%
Pseudomonas aeruginosa	0	0 %
Citrobacter ferrandi	0	0%

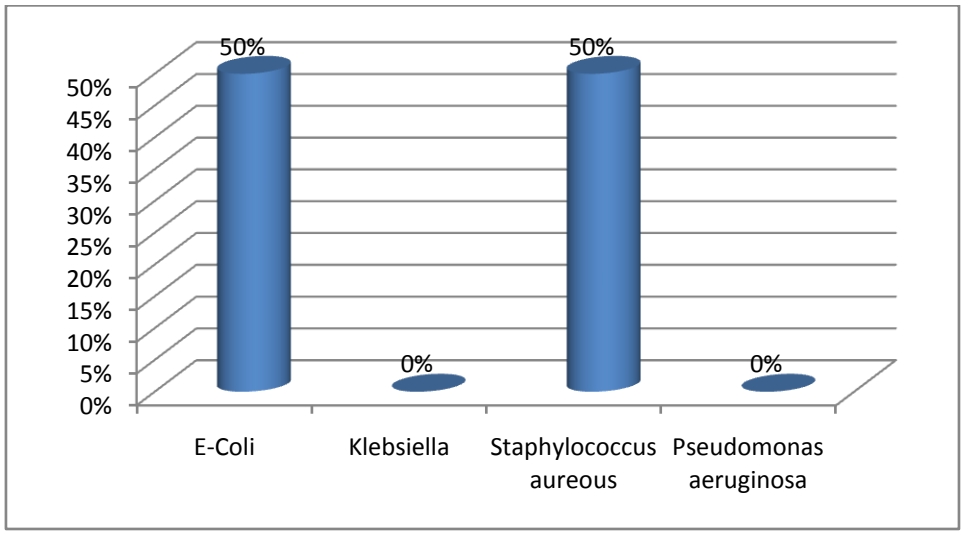

Figure 11: Percentage of growth of different organism in *Sannipataja Mutrakriccha* (n= 4)

Table 12: Percentage of growth in *Asmarija Mutrakriccha*

Urine culture	No of observation	Percentage
Growth present	0	0%
Growth absent	02	100%

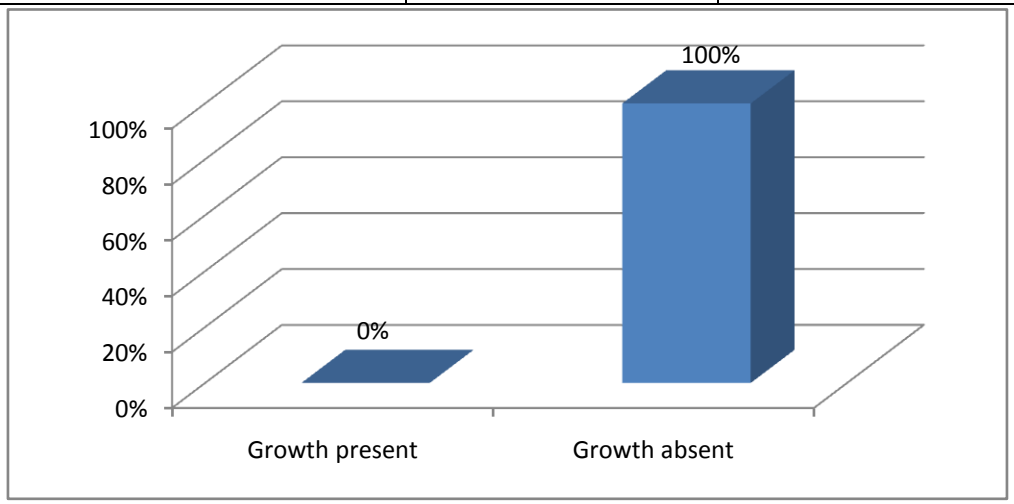

Figure 12: Percentage of growth in *Asmarija mutrakriccha* (n=2)

Table 13: Percentage of growth in *Sukraja Mutrakriccha*

Urine culture	No of observation	Percentage
Growth present	0	0%
Growth absent	03	100%

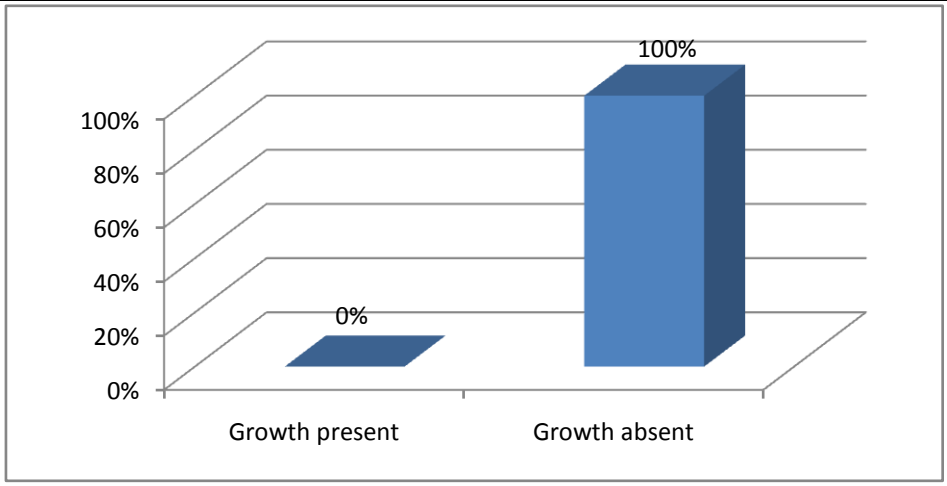

Figure 13: Percentage of growth in *Sukraja Mutrakriccha* (n= 3)

Table 14: Percentage of growth in *Sakritvighataja Mutrakriccha*

Urine culture	No of observation	Percentage
Growth present	01	20%
Growth absent	04	80%

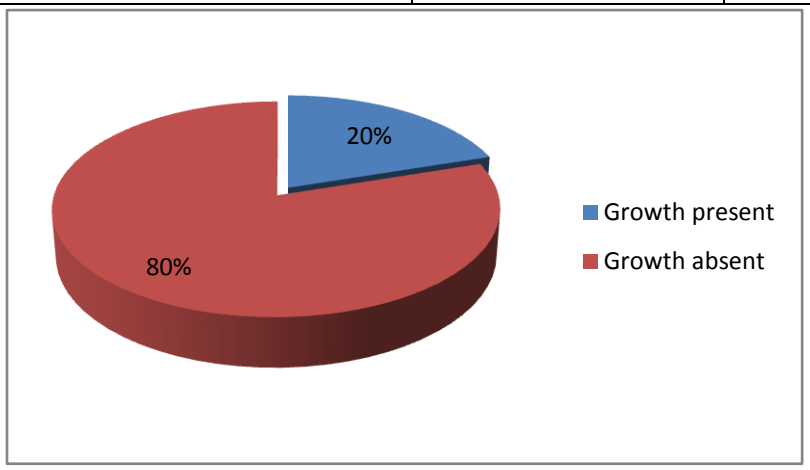

Figure 14: Percentage of growth in *Sakritvighataja Mutrakriccha* (n= 5)

Table 15: Percentage of growth of different organism in *Sakritvighataja Mutrakriccha*

Name of the organism	No of observation	Percentage
E-Coli	01	100%
Klebsiella species	0	0 %
Staphylococcus aureous	0	0 %
Pseudomonas aeruginosa	0	0 %
Citrobacter ferrandi	0	0 %

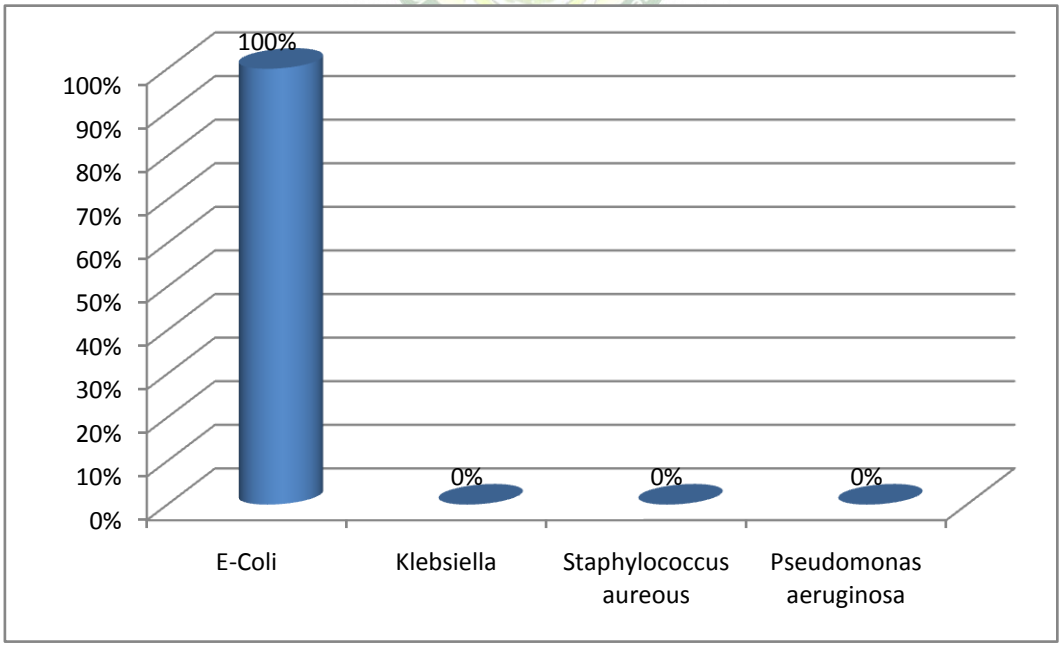

Figure 15: Percentage of growth of different organism in *Sakritvighataja Mutrakriccha* (n= 1)

Table 16: Percentage of growth in *Shalyabhighataja Mutrakriccha*

Urine culture	No of observation	Percentage
Growth present	02	100%
Growth absent	0	0%

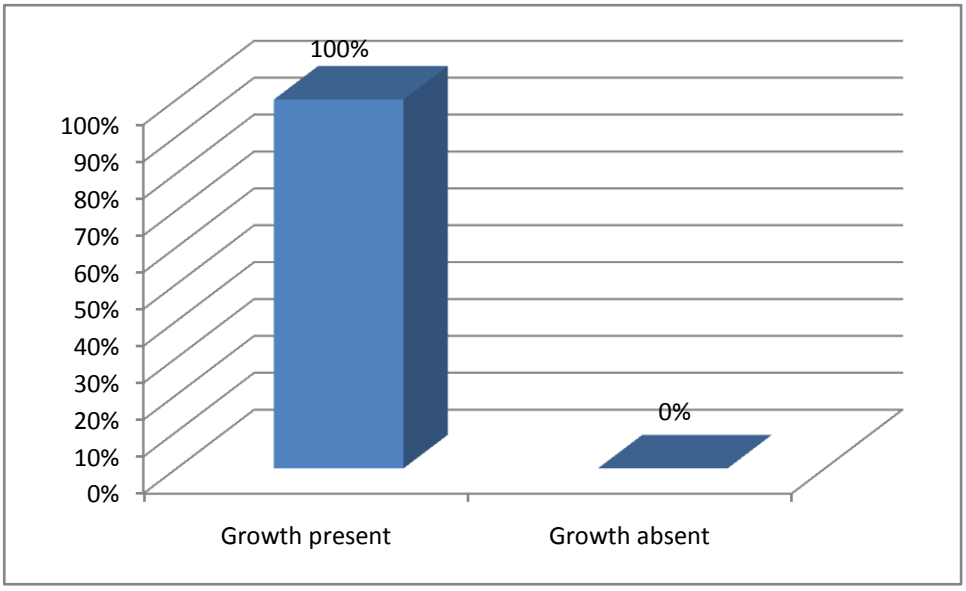

Figure 16: Percentage of growth in *Shalyabhighataja Mutrakriccha* (n=2)

Table 17: Percentage of growth of different organism in *Shalyabhighataja Mutrakriccha*

Name of the organism	No of observation	Percentage
E-Coli	01	50%
Klebsiella	0	0 %
Staphylococcus aureous	0	0 %
Pseudomonas aeruginosa	0	0 %
Citrobacter ferrandi	01	50 %

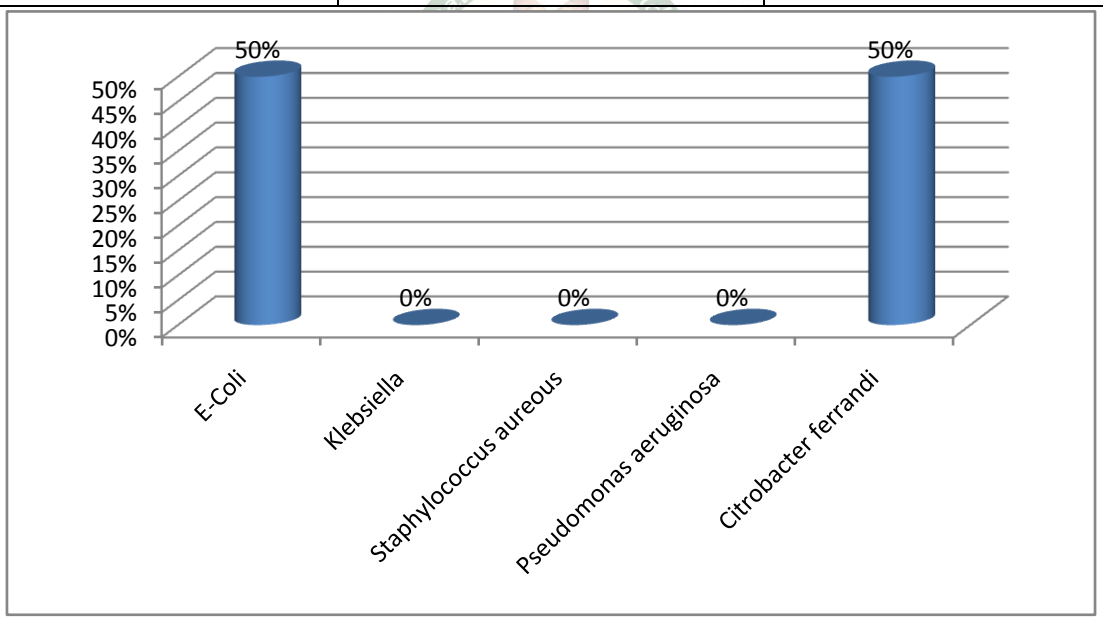

Figure 17: Percentage of growth of different organism in *Shalyabhighataja Mutrakriccha* (n=2)

Table 18: Analysis of total E Coli growth

Types of *Mutrakriccha*	No of observation	Percentage
Vataja Mutrakriccha	02	12.5 %
Pittaja Mutrakriccha	09	56.25 %
Kaphaja Mutrakriccha	01	6.25 %
Sannipataja Mutrakriccha	02	12.5 %
Asmarija Mutrakriccha	0	0 %
Sukraja Mutrakriccha	0	0 %
Sakritvighataja	01	6.25 %
Shalyabhighataja	01	6.25 %

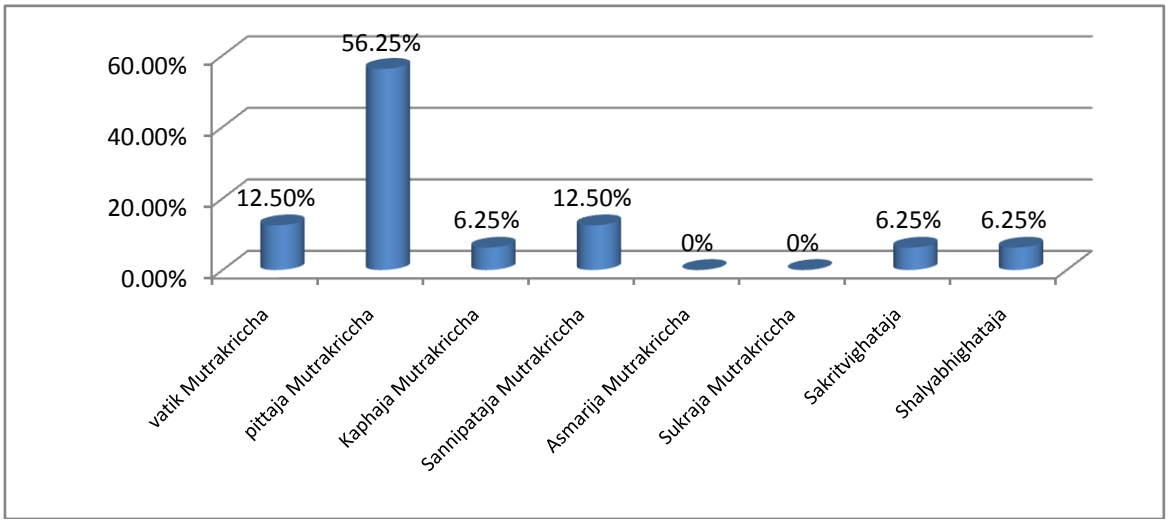

Figure 18: Analysis of total E Coli growth (n=16)

Table19: Analysis of total Klebsiella species growth

Types of *Mutrakriccha*	No of observation	Percentage
Vataja Mutrakriccha	0	0 %
Pittaja Mutrakriccha	03	100 %
Kaphaja Mutrakriccha	0	0%
Sannipataja Mutrakriccha	0	0%
Asmarija Mutrakriccha	0	0 %
Sukraja Mutrakriccha	0	0 %
Sakritvighataja	0	0 %
Shalyabhighataja	0	0 %

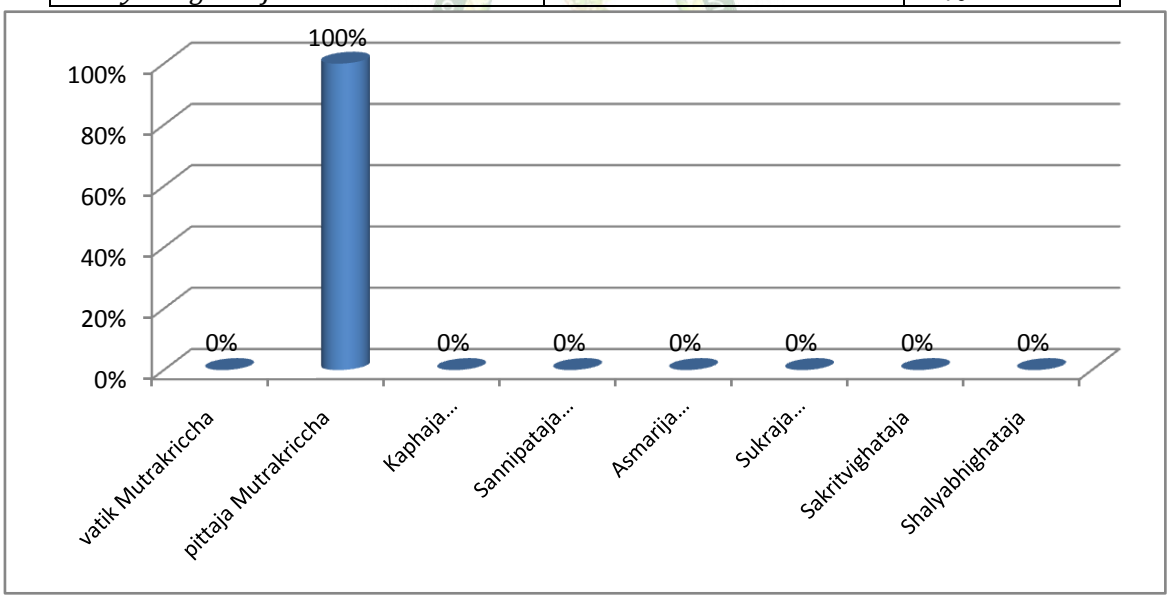

Figure 19: Analysis of total Klebsiella species growth (n=3)

Table 20: Analysis of total Staphylococcus aureous growth

Types of *Mutrakriccha*	No of observation	Percentage
Vataja Mutrakriccha	0	0 %
Pittaja Mutrakriccha	04	66.66 %
Kaphaja Mutrakriccha	0	0%
Sannipataja Mutrakriccha	02	33.33%
Asmarija Mutrakriccha	0	0 %
Sukraja Mutrakriccha	0	0 %
Sakritvighataja	0	0 %
Shalyabhighataja	0	0 %

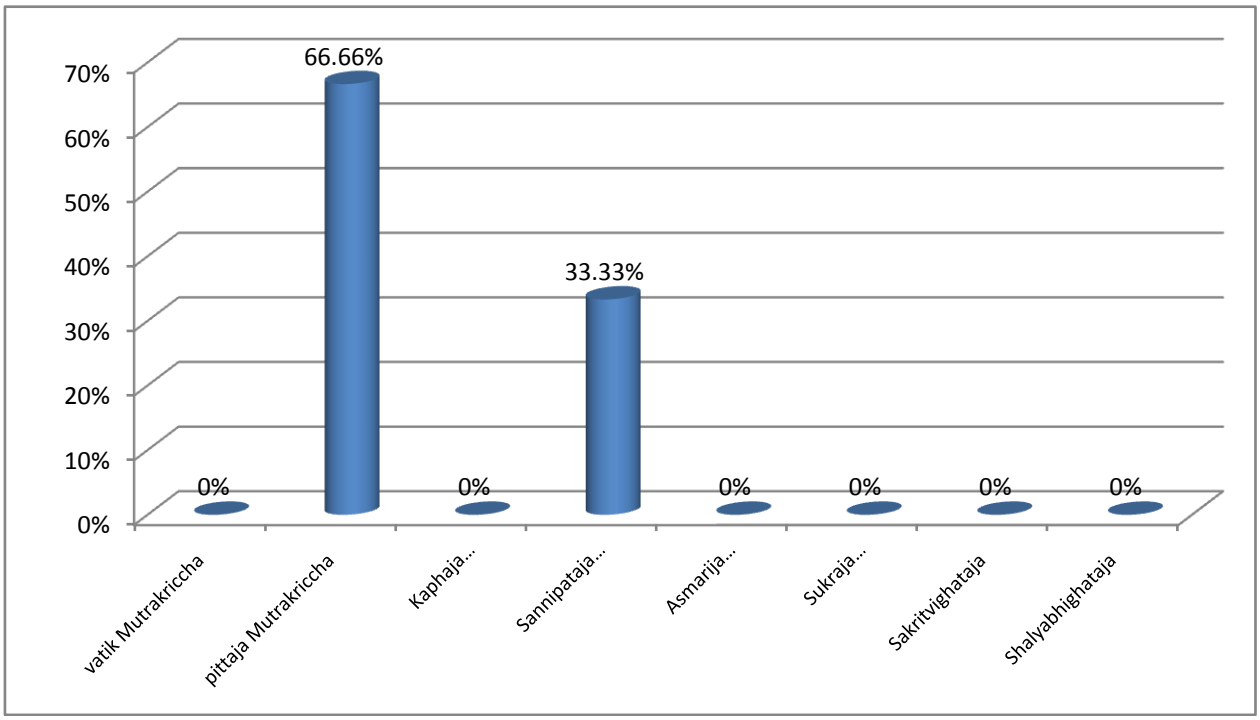

Figure 20: Analysis of total Staphylococcus aureous growth (n= 6)

Table 21: Analysis of total Pseudomonas aeruginosa growth

Types of *Mutrakriccha*	No of observation	Percentage
Vataja Mutrakriccha	0	0 %
Pittaja Mutrakriccha	04	100 %
Kaphaja Mutrakriccha	0	0%
Sannipataja Mutrakriccha	0	0 %
Asmarija Mutrakriccha	0	0 %
Sukraja Mutrakriccha	0	0 %
Sakritvighataja	0	0 %
Shalyabhighataja	0	0 %

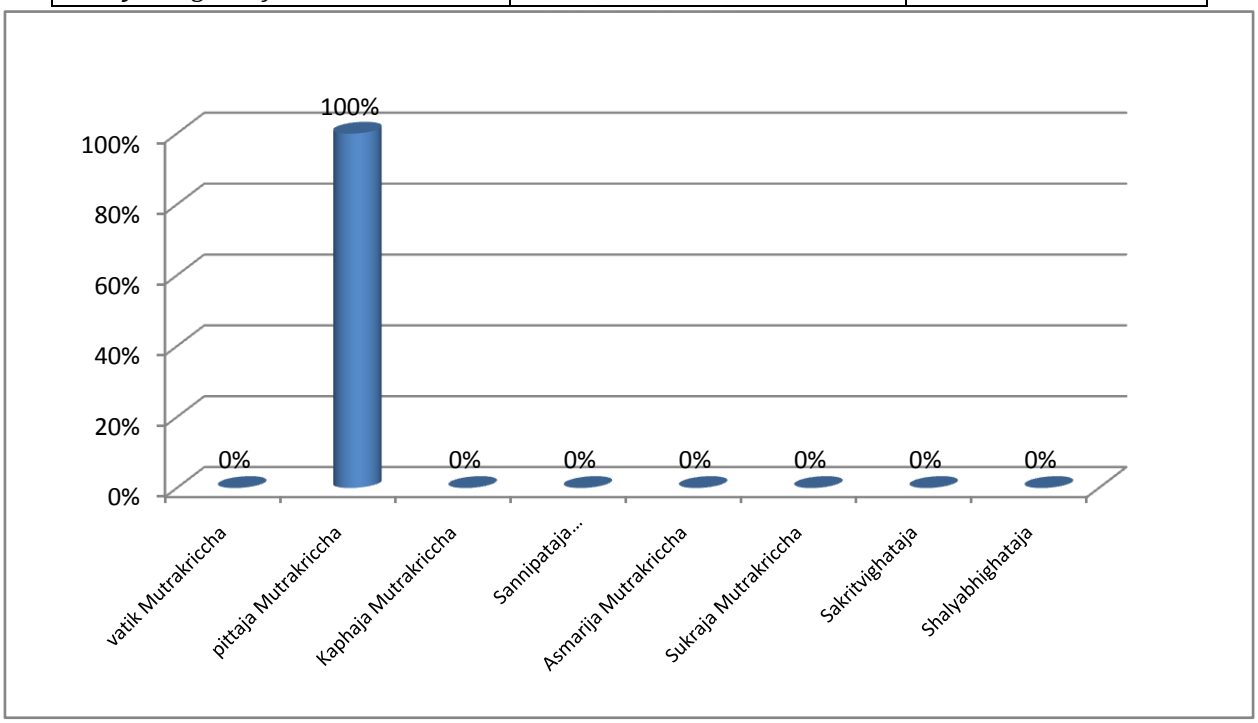

Figure 21: Analysis of total Pseudomonas aeruginosa growth (n=4)

Table 22: Analysis of total Citrobacter ferrandi growth

Types of *Mutrakriccha*	No of observation	Percentage
Vataja Mutrakriccha	0	0 %
Pittaja Mutrakriccha	0	0 %
Kaphaja Mutrakriccha	0	0%
Sannipataja Mutrakriccha	0	0 %
Asmarija Mutrakriccha	0	0 %
Sukraja Mutrakriccha	0	0 %
Sakritvighataja	0	0 %
Shalyabhighataja	01	100 %

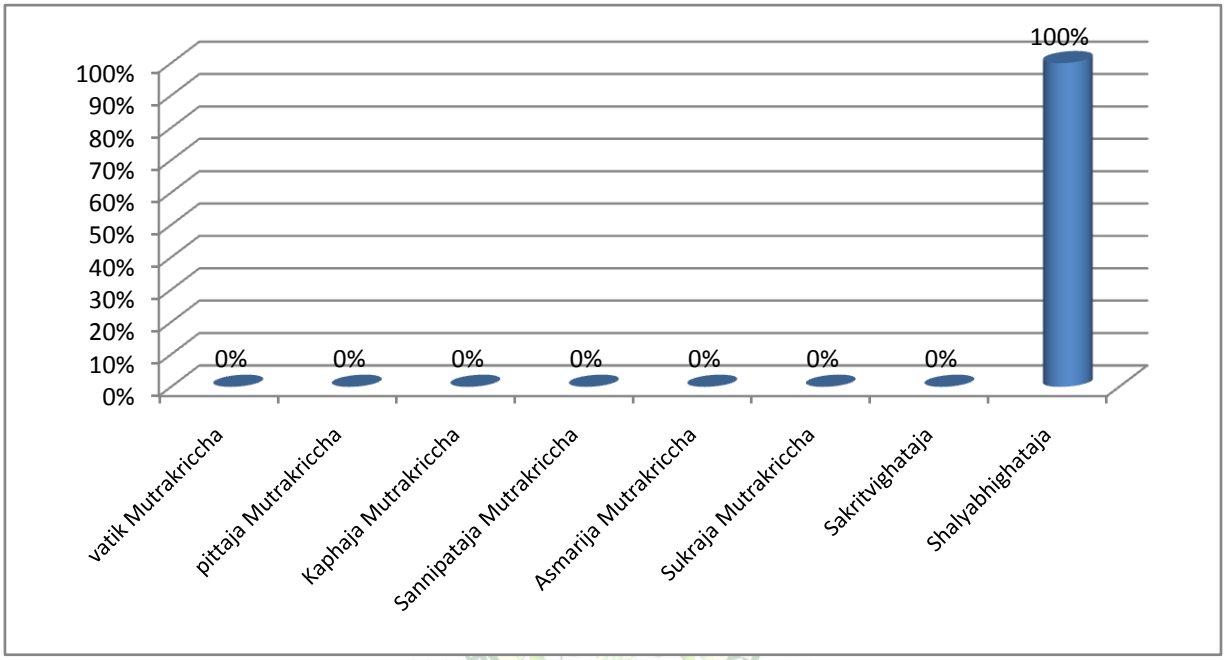

Figure 22: Analysis of total Citrobacter ferrandi growth (n=1)

DISCUSSION

1) Prevalence of different types of *Mutrakriccha*

The study has been done among 100 nos of *Mutrakriccha vyadhi* patients and found *Pittaja Mutrakriccha* (59%) as highly prevalent. It may be due to the *Ahar* and *Vihar* (food habit & lifestyle) of this particular geographical area of India.

2) Percentage of growth in urine culture.

As per the observation, out of 100 patients, 30 nos of *Mutrakriccha* patients have only bacterial growth which means these are related to pathogenic organism. Since only a limited numbers of cases have growth, so the relation of *Mutrakriccha* with any pathogenic organism can't be established always.

3) Prevalence of different organisms in culture growth

The study also shows that among the growth present, E. Coli (53.33 %) is highest followed by Staphylococcus aureous (20%) and Pseudomonas aeruginosa (13.33%). So, in a case of *Mutrakriccha* with bacterial growth, the prevalence of E. Coli is the most common. E. Coli is the main causative factor of Urinary Tract Infection. Hence the study proved the presence of E. Coli.[4]

4) Analysis of *Vataja Mutrakriccha*

Study shows that out of 13 nos of patients of *Vataja Mutrakriccha*, 15.38 % have growth and 84.62 % have no growth which indicate that *Vataja Mutrakriccha* is mostly non- infectious. It may be due to the subjective parameters of *Vataja Mutrakriccha* like *Tibra vastiruja, Tibra bonkhonruja*, *Medhra ruja* and *Muhurmutratiyah*[11] are due to other causes of Dysuria, i.e., obstructive uropathy.

Again out of 15.38% of growth, study shows 100% prevalence of E. Coli. But prevalence of E. Coli can't be established because number of growth present out of the total *Vataja mutrakriccha* is very low.

5) Analysis of *Pittaja Mutrakriccha*

Study shows that about 1/3rd of total *Pittaja Mutrakriccha* patients have growth (33.89%) of different organism. So *Pittaja Mutrakriccha* sometime can be related with any type of pathogenic organism and also we can say that all the symptoms of *Pittaja mutrakriccha* like *Pitamutra, Saraktamutra, Sadaha, Saruja mutra* and muhurmutratiyah[12] are due to Urinary Tract Infection.

Again in case of percentage of growth of different organism in *Pittaja Mutrakriccha*, E. Coli is 45 % followed by Staphylococcus aureous 20% Pseudomonas aeruginosa 20% and Klebsiella species 15%. But the study directly excluded the relation of *Pittaja Mutrakriccha* with Citrobacter ferrandi as the growth of citrobacter ferrandi is 0%

6) Analysis of *Kaphaja mutrakriccha*

Study shows only 10% of total *Kaphaja mutrakriccha* has growth which indicate that this type of *Mutrakriccha* is mostly non-infectious. From this point we can say that the *Lakshanas* of *Kaphaja mutrakriccha* which are the diagnostic criteria of this type of *Mutrakriccha* like *Vasti* and *Linga gurutwasotha* and *Picchila mutra*[13] can be occurred due to some non infectious causes like obstructive uropathy.

Again though percentage of E. Coli growth among the growth present is 100%, but the numbers of growth present is very low. So it can't be established the prevalence of E. Coli in case of *Kaphaja Mutrakriccha*.

7) Analysis of *Sannipataja mutrakriccha*

Study shows that about two third of total cases of *Sannipataja Mutrakriccha* has growth (66.66%). So, *Sannipataja Mutrakriccha* may be related with infection of urinary tract. But it can't be established as the sample size is only 6 out of total 100 *Mutrakriccha* cases. If the sample size would have been more, a conclusion could have been drawn.

And in case of prevalence of organisms related for *Sannipataja Mutrakriccha*, study shows E.Coli and Staphylococcus aureous are responsible equally having 50% growth each.

8) Analysis of *Asmarija mutrakriccha*

Study shows that *Asmarija Mutrakriccha* has no growth, so it can be correlate with non infectious group. But possibility of infection cannot be ruled out as the sample size is very low. If the sample size would have been more, a conclusion could have been drawn.

9) Analysis of *Sukraja mutrakriccha*

Study shows that *Sukraja Mutrakriccha* has no growth, so it can be correlate with non infectious group. But possibility of infection can't be ruled out as the sample size is very low. If the sample size would have been more, a conclusion could have been drawn.

10) Analysis of *Sakritvighataja mutrakriccha*

Study shows that only 20% of *Sakridabhighataja Mutrakriccha* has growth. So, this type of *Mutrakriccha* are mostly non infectious.

Again from the point of different types of growth present, E. Coli is prevalent, but can't be established due to sample size is very less.

11) Analysis of *Shalyabhighataja mutrakriccha*

Study shows that only two nos of cases collected and evaluated during the study. Though the growth is 100% but it can't be established that all *Shalyabhighataja Mutrakriccha* are infectious and prevalence of organisms are E. Coli and Citrobacter Ferrandi. If the sample size would have been more, a conclusion could have been drawn.

12) Analysis of total E Coli growth

Study shows out of total 16 numbers of E coli growth, 56.25% is related with *Pittaja Mutrakriccha* followed by *Vataja* and *Sannipataja Mutrakriccha* 12.5% each and *Kaphaja* (6.25%), *Shalyabhighataja* (6.25%) and *Sakridabhighataja Mutrakriccha* (6.25%).

Out of total E. Coli growth, it can be established that E. Coli growth can be correlated with *Pittaja Mutrakriccha*.

13) Analysis of total Klebsiella species growth

In case of Klebsiella species, 100 % of cases directly related with *Pittaja Mutrakriccha*, but can't be established due to low sample size.

14) Analysis of total Staphylococcus aureous growth

In case of Staphylococcus aureous, it is mostly related with *Pittaja Mutrakriccha* (66.66%) followed by *Sannipataja Mutrakriccha* (33.33%). But out of 30 nos of growth, only 6 nos of patients have Staphylococcus aureous growth. So, the relation of Staphylococcus aureous can't be established with *Pittaja Mutrakriccha*. If the sample size would have been more, a conclusion could have been drawn.

15) Analysis of total Pseudomonas aeruginosa growth

Study shows Pseudomonas aeruginosa is directly related to *Pittaja mutrakriccha*, but can't be established because the nos of growth is minimum in respect to total *Mutrakriccha* case.

16) Analysis of total Citrobacter ferrandi growth

Citrobacter ferrandi is also directly related to *Shalyabhighataja Mutrakriccha*, but it can't be established because the growth sample is only one.

CONCLUSION

The study shows the following conclusion

1. The study conclude a weak relation of *Mutrakriccha vyadhi* with pathogenic organism found in urine culture examination, but not always. If the sample size would have been more, a final conclusion could have been drawn.

2. The study concluded that in a *Mutrakriccha vyadhi* with bacterial growth, the presence of E. Coli is more.
3. The study concluded that *Pittaja Mutrakriccha* may be related with infection of E. Coli.
4. The study also concluded a prevalence of *Pittaja Mutrakriccha* where the study was conducted.

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***Address for correspondence**
Dr Akshay Kalita
P. G. Scholar,
Dept. of Roga Nidan
Govt. Ayurvedic College, Guwahati-14, Assam, India.
Email: kalitaakshay3@gmail.com
Contact No: 9954855001/ 9435869193