

## EFFECT OF *DARUHARIDRA RASAKRIYA* ON *PRAVAHIKA* (*AMOEBIASIS*)

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### Abstract

*Pravahika* is a disease described in the Ayurvedic texts which can be compared with the Amoebiasis. It is caused by the infection of the Protozoan *Entamoeba histolytica*. It may be diagnosed by the symptoms of diarrhea, precipitate stools, abdominal cramps, flatulence etc. Laboratory investigations included the stool examination for the presence of amoebic cysts. For the treatment of the disease, drugs which can act as deepana, paachana, grahi, sthambhana etc. are to be selected. So *Daruharidra* having the above properties was selected for the study. It was given in the form of *Rasakriya*. The method adopted for the study is open clinical method of study. For the present study, 30 patients showing positive stool examination for the presence of amoebic cysts were taken for the study and *Daruharidra Rasakriya* was administered in a dosage of 300mg for 10 days. The net result of the study showed good response in 80% of the patients. Statistical analysis of the mean difference before and after treatment of the parameters showed a highly significant result ( $p < 0.0001$ ).

**Key words:** *Daruharidra*, *Rasakriya*, *Pravahika*, Amoebiasis, Ayurveda

### **Introduction:**

*Pravahika* is a disease described in the Ayurvedic texts which can be compared with the diarrhoeas and dysenteries of the present day medical literature. It was described in the *shleshmika atisaara*. (1) (Sushruta Samhita, Uttara Sthana 40/ 138-160). It is described with various synonyms like *Purisha kshaya*, *Nischaraka* or *Nissarakara*, *Bhimbhisi* etc. It occurs because of the excessive consumption of the heavily digested, oily or dry, very hot, liquid and sticky foods, incompatible foods, excessive eating and irregular food habits are the causative factors of the disease. It also occurs as a complication of the *panchakarma*. Psychological causes like fear, etc. consumption of the contaminated water and excessive consumption of the alcoholic beverages and allergic foods also play a major role. Suppression of the vega

(natural urges) and infections (*krimi*) are also the commonest causes of *Pravahika*.

It is expressed by the symptoms of pain in the chest, abdomen and anal canal, *gatraavasaada* (tiredness), *anilasannirodha* (flatulence), *vitsangha* (constipation), *adhmaana* (bloating) and *avipaaka* (indigestion). The main feature of the disease is the painful and forceful elimination of less or more quantity of the sticky (*picchila*) stool. The other features of *Pravahika* are abdominal and anorectal pain due to *vaata*, burning pain due to *pitta*, *kapha* mixed sticky stools due to *kapha* and blood mixed stool due to *raktha* involvement (1).

The disease is compared with amoebic and other forms of dysenteries of the modern medical literature.

Amoebiasis is the next major cause of death, next to Malaria, in the developing countries. It occurs because of the poor sanitation. It is caused by the infection of

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the Protozoan *Entamoeba histolytica*. The parasite was first described by Losch (1875) in Russia.

The life cycle of *E. histolytica* consists of two stages: an infective cyst and an invasive trophozoite. The trophozoites measure 10–50 µm in diameter and contain a single nucleus with a central karyosome. The cysts measure 10–15 µm in diameter and typically contain four nuclei.

*E. histolytica* cysts are resistant to acidification, chlorination and desiccation. They are capable of surviving in a moist environment for several weeks and are spread via the ingestion of faecally contaminated food or water. After ingestion of the cysts by a human host, excystation occurs within the lumen of the small intestine. During excystation, nuclear division is followed by cytoplasmic division, giving rise to eight trophozoites. The trophozoites then reside in the lumen of the caecum and large intestine, where they adhere to the colonic mucus and epithelial layers; re-encystation of the trophozoites occurs within the lumen of the colon, resulting in the excretion of cysts in the faeces and continuation of the life cycle.

*E. histolytica* can spread in the bloodstream (haematogenously) after it has penetrated the colonic epithelium and can establish persistent extraintestinal infections (most commonly amoebic liver abscess).

The clinical forms of intestinal Amoebiasis may be

1. Asymptomatic cyst carriers - It consists of colicky lower abdominal pain and increased frequency of bowel movements with loose watery diarrhea.
2. Symptomatic. The symptomatic intestinal Amoebiasis can progress from mild diarrhoea (non-dysenteric colitis with intermittent diarrhea, mucus, abdominal pain, flatulence and weight loss) to severe haemorrhagic dysentery (acute

amoebic dysentery with presence of blood and mucus in the stool, accompanied by abdominal pain, tenderness, tender Hepatomegaly and rectal tenesmus) with or without complications.

Laboratory diagnosis can be done by:

- Direct examination of colonic exudates obtained at sigmoidoscopy or of freshly passed stool as a saline wet mount.
- Sigmoidoscopy and
- Barium enema examination
- The Amoebic Fluorescent Anti-Body Titre (FAT)

**Treatment:**

The treatment for this condition is aimed at administering the drugs which have the properties of *langhana*, *deepana*, *paachana* and *grahi*. After the infection reduces *sthambhana dravyas* can be administered.

**Rationale in the selection of the drug:**

Many internal medications are mentioned in Ayurvedic texts for the treatment of *Pravahika*. *Daruharidra Rasakriya* is selected for the present study as it has the properties of *deepana*, *paachana*, *grahi* etc which are more suitable for the control of *Pravahika*.

*Daruharidra* (*Berberis aristata*, *Berberidaceae*) is one of the important medicinal plants used by the Ayurvedic physicians since ages for various ailments. It is also known by the synonyms Peetadru (stems are yellow in colour), Kaleyaka (It removes doshas out of the body), Daarvi (It washes out doshas), Pacham pachca (Increases digestive power), Parjani (It prevents the diseases), Katamkateri (It removes the doshas, which cause obstruction to the srotas) etc. (2)

It is said to be used in diseases like *Prameha*, *Kusta*, *Rajyakshma*, *Unmaada*, *Apasmaara*, *Kshatha*, *Kshaya*, *Swayathu*, *Arshas*, *Grahani*, *Paandu*, *Visarpa*, *Visha*, *Vrana*, *Vaataraktha*, *Mukha roga*, *Hikka*, *Shwaas*, *Yonivyapath*, *Netra roga* and *Atisaara*. (2,3)

The chief chemical content in it is Berberine (C<sub>20</sub>H<sub>17</sub>NO<sub>4</sub>). Berberine has been proved to have wide range of pharmacological activities like antimicrobial activity against a variety of intestinal parasites like *Entamoeba histolytica*, bacteria, fungi, protozoans, helminths, chlamydia, and viruses. It is also useful in ocular trachomal infections, cardio-vascular diseases like tachyarrhythmias etc. (4)

### Mode of preparation of *Rasakriya*(3):

*Rasakriya* is the form of preparation of the aqueous extract of the plant materials used by the Ayurvedic physicians. In this the 1 part of the drug(s) are made into coarse powder and boiled with 16 parts of water till only 4 parts of the water remains. Then it is filtered and the filtrate is again heated on a low flame till it becomes semi-solid. This semisolid mixture is again dried in shade or drier to get a solid mass of extract. This is called as *Rasakriya*. This is a dosage form mentioned in Ayurvedic classics which is palatable and less in dosage (approximately 1/10<sup>th</sup> of the powder). This can be given in a dose of 300mg TID.

By considering the above mentioned the present clinical study is conducted to know the efficacy of the *Rasakriya* of *Daruharidra* (*Berberis aristata*, Berberidaceae) in the cases of *Pravahika* (Amoebiasis).

### Aims and objectives:

The aim of the study is to study the effect of the *Daruharidra* (*Berberis aristata*, Berberidaceae) *Rasakriya* in the cases of Amoebiasis.

### Materials and methods:

#### Selection of the patient:

30 patients who are diagnosed to have the symptoms of acute amoebic infection and positive microscopic stool examination for *Entamoeba histolytica* were taken for the study from Government Ayurvedic Hospital, Hyderabad.

Patients with other forms of diarrhoeas are not considered for this study.

**Method of study:** Open clinical study.

#### Inclusion criteria:

1. Patients with positive microscopic stool examination for *Entamoeba histolytica* cysts and having the symptoms of Amoebiasis.
2. Patients without the symptoms of severe dehydration.
3. Patients with age group between 20 and 60 years were selected for the study.

#### Exclusion criteria:

1. Severe dehydration
2. Patients below 20 years of age.
3. Pregnant and lactating women.
4. Elderly patients.
5. Patients having arrhythmias.
6. Patients having complications of the disease.

#### Assessment:

1. Based on the relief in the symptoms.
2. Stool examination for the presence of cysts.

### Symptoms and grading of the symptoms:

#### Diarrhoea:

- 1-2 motions a day – 0
- 3-4 motions a day – 1
- 4 -5 motions a day – 2
- Above 5 motions a day – 3

#### Precipitate stool

- Absent – 0
- Present at certain times a day – 1
- Present all through the day – 2

#### Melena

- Absent – 0
- Few blood stains in stool – 1
- Bloody stools – 2

#### Abdominal cramps

- Absent – 0
- Mild not affecting daily activity – 1
- Affecting daily activity – 2

#### Flatulence

- Absent – 0

- Mild without bloating and constipation – 1
- With bloating and constipation – 2

**Epigastric distress**

- Absent – 0
- Mild burning sensation – 1
- Burning with sour belchings – 2
- Burning with vomitings – 3

**Fatigue**

- No Fatigue - 0.
- Fatigue not affecting his daily activities - 1
- Fatigue affecting his daily activities - 2
- Activities reduced due to weakness - 3

**Stool examination:**

- No cysts – 0
- Positive for the cysts – 1

**Total efficacy of therapy:**

Basing on the individual score of each finding before and after treatments, the response of the treatment can be assessed. Overall effect of the treatment in each individual patient can be assessed by the below mentioned formula

Over all percentage of relief = (Total score of all findings before treatment – Total score of all findings after the treatment) / Total score of all findings before treatment X 100

**Classification of results:**

- No response: if the efficacy is below 50%.
- Poor response: If the efficacy is between 51 to 60%.
- Fair response: If the efficacy is between 61-75%.
- Good response: if the efficacy is between 76-100%.

**Drugs:**

*Daruharidra* bark was procured from Jaipur market and was tested for its microscopic identity in the Department of Dravyaguna, Government Ayurvedic College, Hyderabad. The bark is then made into course powder and *Rasakriya* is prepared as per the procedure mentioned for the *Rasakriya* by the Ayurvedic texts.

The *Rasakriya* thus obtained is made into 300mg pills (Figure 1-3).

**Dose:** 300mg TID before meals with warm water.

**Route of Administration:** Oral route.

**Duration of the Treatment:** 10 Days.

**Clinical assessment**

The study is based on the randomized clinical trial conducted at Govt Ayurvedic hospital, Hyderabad during the period 2002 to 2003.

Both the subjective and objective parameters are recorded before and after the treatment and analyzed statistically.

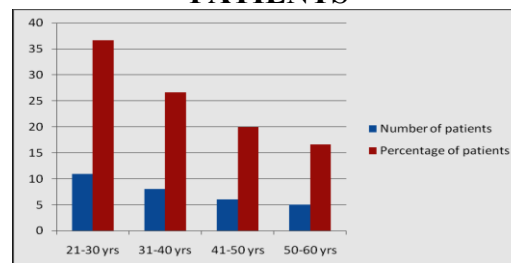
**Observation and results:**

Totally 30 patients were taken for the study. The patients are classified according to the age, sex, diet and place of residence. The tables showing the distribution of the patients in the above groups are as follows:

**TABLE 1: SHOWING AGE WISE DISTRIBUTION OF THE PATIENTS**

Age (in years)	Number of patients	Percentage of patients
21-30	11	36.67
31-40	8	26.67
41-50	6	20
50-60	5	16.67
<b>Total</b>	<b>30</b>	<b>100</b>

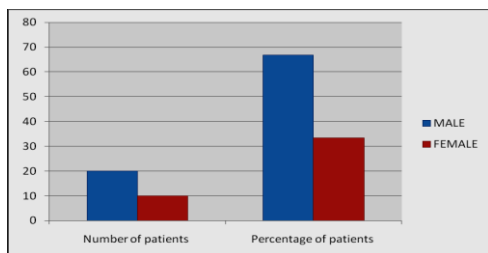
**AGE WISE DISTRIBUTION OF THE PATIENTS**



**TABLE 2: SHOWING SEX WISE DISTRIBUTION OF PATIENTS**

Sex	Number of patients	Percentage of patients
Male	20	66.67
Female	10	33.33
<b>Total</b>	<b>30</b>	<b>100</b>

**SEX WISE DISTRIBUTION OF PATIENTS**



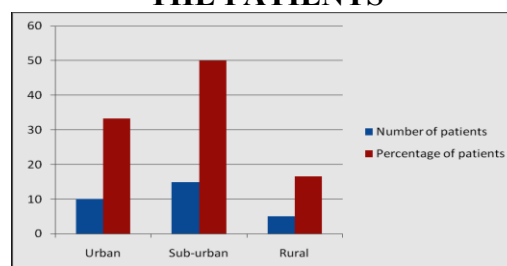
**TABLE 4: SHOWING HABITAT WISE DISTRIBUTION OF THE PATIENTS**

Habit	Number of patients	Percentage of patients
Urban	10	33.33
Sub-urban	15	50
Rural	5	16.67
Total	30	100

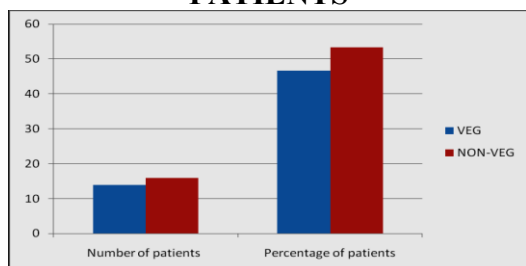
**TABLE 3: SHOWING DIET WISE DISTRIBUTION OF THE PATIENTS**

Diet	Number of patients	Percentage of patients
Veg	14	46.67
Non-veg	16	53.33
Total	30	100

**HABITAT WISE DISTRIBUTION OF THE PATIENTS**



**DIET WISE DISTRIBUTION OF THE PATIENTS**



**Results:**

**TABLE 5: SHOWING THE PERCENTAGE OF RELIEF ON OVER ALL PARAMETERS:**

SYMPTOMS	No of patients showing the score			Percentage of result
	BT	AT	BT-AT	
Diarrhoea	80	7	73	91.25
Precipitate stool	46	4	42	91.30
Melena	41	4	37	90.24
Abdominal cramps	50	10	40	80
Flatulence	49	6	43	87.75
Epigastric distress	51	10	41	80.39
Fatigue	44	5	39	88.63
Stool examination	30	7	23	76.67

**TABLE 6: SHOWING THE OVERALL RESPONSE TO THE TREATMENT:**

Drugs	Results of the treatment				
	Good	Fair	Poor	No	Total
<i>Daruharidra Rasakriya</i>	24 (80%)	6 (20%)	0	0	30 (100%)

**TABLE 6: SHOWING THE RESULT OF THE TREATMENT:**

SYMPTOMS	No. of Observations	Mean grade score			SD	SE	't' value	'p' value
		BT	AT	BT-AT				
Diarrhoea	30	2.67	0.23	2.43	±0.57	0.104	23.45	<0.0001
Precipitate stool	30	1.53	0.13	1.4	±0.56	0.103	13.61	<0.0001
Melena	30	1.37	0.13	1.23	±0.63	0.114	10.79	<0.0001
Abdominal cramps	30	1.67	0.33	1.33	±0.66	0.121	11.05	<0.0001
Flatulence	30	1.63	0.20	1.43	±0.68	0.124	11.56	<0.0001
Epigastric distress	30	1.70	0.33	1.37	±0.76	0.140	9.786	<0.0001
Fatigue	30	1.47	0.17	1.30	±0.65	0.119	10.93	<0.0001
Stool examination for cyst	30	1	0.23	0.77	±0.430	0.079	9.76	<0.0001

## **DISCUSSION**

*Pravahika* (Amoebiasis) is a disorder mostly affecting the people living in contaminated areas. It is one of the major causes of the death in developing countries. So the present study has been conducted to know the efficacy of Ayurvedic drug, *Daruharidra*, in the management of the disease. By preparing the *Rasakriya* of the drug, the dosage is reduced to 1/10<sup>th</sup> of the powdered drug and the palatability increased as it is easy to consume a 300 mg tablet.

Overall result of the above study showed 80% of the patients showing good response to the treatment and the other 20% showing fair response. No patient showed poor or no response as compared by the symptomatology. 7 (23.33%) out of the 30 patients showed the presence of cysts in the stool examination even after the 10<sup>th</sup> day of the treatment. Even though the stool examination in these 7 patients was positive for the cysts, symptomatically they showed fair response to the treatment.

Statistical analysis of the each symptom showed highly significant result (p<0.0001). Stool examination also significant results (p<0.0001).

The net result of the study proved to be highly significant by the statistical and percentage analysis. This may be ascribed to the properties of the *Daruharidra* as mentioned in the classical Ayurvedic texts.

## **Conclusion**

To summarize the data it can be concluded that the *Rasakriya* of *Daruharidra* helps in the treatment of the *Pravahika* (Amoebiasis) effectively. This may because of the chemical content Berberine in it, which has the antimicrobial and antiprotozoal properties. As mentioned in the classical texts *Daruharidra* is having the properties of deepana, paacana, grahi and krimi hara properties. These properties are required for the treatment of the disease. So *Daruharidra* proved efficacious in the cases of *Pravahika*.

## **Acknowledgements:**

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Figure 1: *Daruharidra* stem pieces

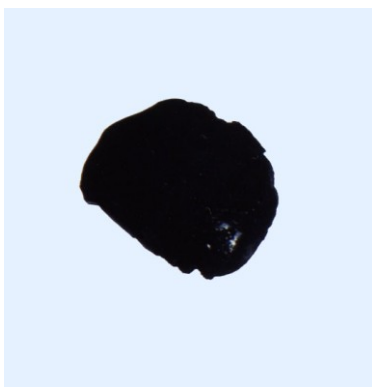


Figure 2: *Rasakriya* of *Daruharidra*



Figure 3: *Rasakriya* made into pills of 300mg

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