



## CHATURBEEJA IN PRIMARY DYSMENORRHOEA (KASHTARTAVA): AN OBSERVATIONAL STUDY

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### ABSTRACT

In folk medicines, *Chaturbeeja* (combination of seeds of four plants i.e *Trigonella Foenum-graecum*, *Lepidium sativum*, *Nigella sativa*, *Trachyspermum ammi* in equal quantity) has been traditionally used for variety of applications including treatment of Dysmenorrhoea, the most common gynaecological symptom reported by women. To promote the proper use of such medicines and to determine their potential as sources for new drugs, it is essential to study medicinal plants, which have folklore reputation in a more intensified way. A Single blind, prospective observational clinical study was conducted to evaluate the efficacy of Chaturbeeja powder in Primary Dysmenorrhoea (*Kashtartava*). 25 patients were administered Chaturbeeja powder in a single dose of 3g with hot water at night, 7 days before starting of menstruation till 3<sup>rd</sup> day of the menstruation cycle. After assessing the results it was observed that 12 patients were markedly improved, 8 moderately improved and 5 were improved.

**Keywords:** *Dysmenorrhoea, Kashtartava, Chaturbeeja, Trigonella Foenum-graecum, Lepidium sativum, Nigella sativa, Trachyspermum ammi, Folk medicine.*

### INTRODUCTION:

India is well known historically as a land of spices and aromatic plants and continues to be one of the leading producers of spices and medicinal plants in the world. The beneficial health effects of many plants, used for centuries as seasoning agents in food and beverages, have been claimed for preventing various ailments. To promote the proper use of such medicines and to determine their potential as sources for new drugs, it is essential to study medicinal plants, which have folklore reputation in a more intensified way.<sup>1</sup> *Chaturbeeja* churna/powder has long been a part of the *folk medicine* from many parts of the world for the complaint of Dysmenorrhoea. Dysmenorrhoea is of two types out of which Primary dysmenorrhea is characterized by a cramps in/spasmodic pain in supra pubic pain that begins somewhere between several hours before and a few hours after the onset of the menstrual bleeding. Symptoms peak with maximum blood flow and usually last less than one day, but the pain may persist up to 2 to 3 days<sup>2</sup>. The pain is characteristically colicky and located in the midline of the lower abdomen but may also be described as dull and may extend to lower quadrants, the lumbar area, and the thighs. Frequently associated symptoms include diarrhoea, nausea and vomiting, fatigue, light-headedness, headache, dizziness and, rarely, syncope and fever<sup>3-5</sup>. Dysmenorrhea is the most common gynaecological symptom reported by women. Ninety percent of women presenting for primary care suffer from some menstrual pain<sup>6</sup>. Population surveys suggest that, although prevalence rates vary considerably by geographical location, complaints of dysmenorrhea are widespread in diverse populations<sup>7-11</sup>. Furthermore, one third to one half of these women report moderate or severe symptoms. Symptoms are frequently associated with time lost from school, work, or other activities<sup>12</sup>.

*Kashtartava* is the term which is being used for the condition where in a woman may suffer with pain during menstruation and it covers all the problems & ailments that are mentioned in various *artavavyapat/Yonivyapada* & other diseases related with female reproductive system in classical literature of Ayurveda. By analysis one can state this is a result of

vitiation of *Apaana vata* (pelvic physiology regulator), *Apanavatamargavarodha* (disturbed pelvic physiology), and *artavadushti* (menstrual dysfunction) & *dhatukshaya* (tissue loss). *Kashtartava* can be compared with the Dysmenorrhea in modern medicine. In Ayurvedic classics no separate management is mentioned independently for *Kashtartava*(Dysmenorrhoea). Ayurveda advocates many a medicament for the management of this problem as per the disease condition. Several research works had been reported in this regard also. In this study an attempt has been made to evaluate the efficacy of a purely compound herbal formulation i.e *Chaturbeeja Churna* (combination of seeds of four plants i.e *Methi- Trigonella Foenum-graecum, Chandrashur -Lepidium sativum, Kalajaji- Nigella sativa and Yavanika- Trachyspermum ammi in equal quantity*), highlighted in *Ayurvedic* text for its efficacy in *Kashtartava/Primary Dysmenorrhoea*<sup>13-19</sup>.

### MATERIALS AND METHODS:-

#### Collection and preparation of Drug:-

Dried and cleaned raw seeds of *Methi (Trigonella Foenum-graecum)*, *Chandrashur (Lepidium sativum)*, *Kalajaji (Nigella sativa)*, *Yavanika (Trachyspermum ammi)* were purchased from local market after being authenticated by the Dravyaguna experts of the college. The seeds were powdered with a mechanical grinder to pass through a 0.8-mm mesh sieve and stored in an airtight glass container.

**Patients:** 25 (twenty five) Patients, attending the OPD of *Prasooti tantra* and *Stree roga* at Rajiv Gandhi Govt. Ayurvedic College Hospital, Paprola Dist. Kangra (HP), with characteristic features of *Kashtartava* (Dysmenorrhoea), were selected and registered irrespective of their caste, creed, religion, income, occupation for the present study.

**Study Design:** An observational study.

#### PROTOCOL DURING TRIAL:-

- Fulfilment of inclusion criteria.
- Consent of patient after making her aware of the merits/demerits of the trial.
- Registration of the patient.
- Investigations done before inclusion into the trial.

- v. Follow up of the patient every month for assessment and clinical evaluation.
- vi. Data so available and deducted clinically was statistically analysed.

**CRITERIA OF INCLUSION:-**

- Patients coming with chief complaint of Dysmenorrhoea with scanty or average bleeding during periods.
- Age group between 12 – 40 years.
- Patients suffering for more than 6 menstrual cycles.

**CRITERIA OF EXCLUSION:-**

- Patients not willing for trial,
- Patients having congestive dysmenorrhoea
- Patients below 12 years and above 40 years,
- Patients with chronic general illness,
- Patients with intrauterine contraceptive devices.
- Patients having problem of Menorrhagia and any anatomic or uterine pathology – fibroid, adenomyosis were excluded from the study.

**INVESTIGATIONS:-**Routine investigations of blood and urine were carried out to rule out associated systemic pathology. Sonography (U.S.G.) was done for uterine and adnexal study, if needed, to rule out any pathology or lesion.

**DRUG SCHEDULE:** *Chaturbeeja Churna*, 3g at bed time, orally, with Luke warm water for 10 days (starting 7 days before commencement of menstruation cycle till 3<sup>rd</sup> day of the of the bleeding phase) with Luke warm water in a dose of 3g twice a day (12 hourly) for two consecutive cycles.

**DURATION OF TRIAL:** The total duration of treatment for the subjects was 2 (two) months.

**FOLLOW UP STUDY:** Follow up was conducted after one month during trial and then after the completion of trial.

**CRITERIA FOR ASSESSMENT:** - The effect of treatment (results) was assessed regarding the clinical signs and symptoms (on the basis of VAS and grading, scoring system). Overall improvement was observed and recorded as Before Treatment (BT) and After Treatment (AT).

**CLINICAL ASSESSMENT:** The criteria adopted for intensity of pain was VAS (Visual Analogue Scale) which is a measurement instrument that tries to measure a characteristic or attitude that is believed to range across a continuum of values and which cannot be easily and directly measured. Operationally a VAS is usually a horizontal line, 100 mm (10 cm) in length, anchored by word descriptor at each end, as illustrated in figure-1.

The patient marks on the line the point that they feel represent their perception of their current state. The VAS score is determined by measuring in millimetres from the left hand end of the line to the point that the patient marks.

Other signs and symptoms were assessed by adopting suitable scoring methods. The details are illustrated in Table 1.

**Overall score of each symptom was recorded as follows:-**

- Absence of symptom -----0
- Presence in mild degree -----1
- Presence in moderate degree -----2
- Presence in severe degree -----3

Figure – 1, Visual Analogue Scale (VAS)

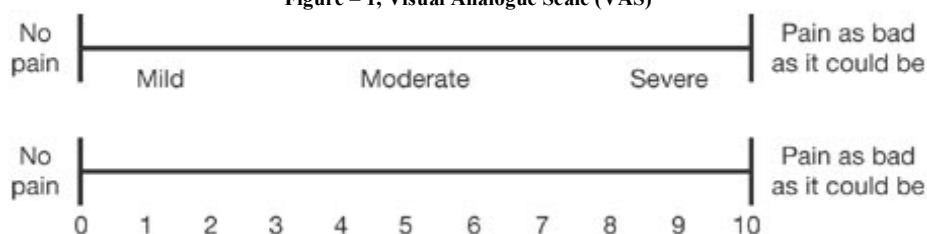


Table 1: Grading of signs and symptoms

| GRADING           | 0       | 1            | 2            | 3           |
|-------------------|---------|--------------|--------------|-------------|
| Intensity         | No pain | Mild         | Moderate     | Severe      |
| Duration          | No pain | Up to 24hrs  | 24to <48hrs  | 48-<72hrs   |
| Nausea            | Absent  | 1-3times/day | 4-5times/day | >5times/day |
| Vomiting          | Absent  | Occasionally | 1-2times/day | >2times/day |
| Breast Tenderness | Absent  | Mild         | Moderate     | Severe      |
| Fever             | Absent  | Mild         | Moderate     | Severe      |
| Headache          | Absent  | Mild         | Moderate     | Severe      |
| Giddiness         | Absent  | Occasionally | 1-2times/day | >2times/day |
| Diarrhoea         | Absent  | Occasionally | 1-2times/day | >2times/day |
| Anorexia          | Absent  | Mild         | Moderate     | Severe      |
| Nervousness       | Absent  | Mild         | Moderate     | Severe      |
| Irritability      | Absent  | Mild         | Moderate     | Severe      |
| Constipation      | Absent  | Mild         | Moderate     | Severe      |
| Weakness          | Absent  | Mild         | Moderate     | Severe      |
| Bloating          | Absent  | Mild         | Moderate     | Severe      |

**OVERALL RESULTS:-**

Markedly improved :- ≥ 75%

Moderately improved :- 51%- 75%,

Improved :- 25%- 50%,

Unimproved :- <25%

**Statistical analysis:** The obtained data on the basis of observations were subjected to statistical analysis in terms of

mean, standard deviation, standard error and unpaired ‘t’ test were conceded at the level of p<0.001 as highly significant, p<0.05 or p<0.01 as significant and p<0.10 or p>0.01 as insignificant to carry out the results.

**RESULTS:**

**EFFECT OF THERAPY** - The efficacy of *Chaturbeeja* powder orally in twenty five patients was noted and results derived after statistical analysis were as per the Table No. – 2.

Table 2: Effect of chaturbeeja churna on signs and symptoms

| Symptoms          | Mean score |      | Relief |       | Paired -t test |        | T     | P      |
|-------------------|------------|------|--------|-------|----------------|--------|-------|--------|
|                   | B.T.       | A.T. | Diff   | % age | S.D.±          | S.E. ± |       |        |
| Intensity of pain | 2.76       | 0.96 | 1.8    | 65.22 | 0.82           | 0.163  | 11.02 | <0.001 |
| Duration of pain  | 1.75       | 0.76 | 0.99   | 56.57 | 0.71           | 0.141  | 7.07  | <0.001 |
| Nausea            | 2.06       | 0.63 | 1.44   | 69.70 | 0.81           | 0.203  | 7.06  | <0.001 |
| Vomiting          | 1.5        | 0.13 | 1.38   | 91.67 | 0.74           | 0.263  | 5.23  | =0.001 |
| Breast Tenderness | 1.83       | 0.5  | 1.33   | 72.67 | 0.52           | 0.211  | 6.33  | =0.001 |
| Fever             | 1.14       | 0.43 | 0.71   | 62.48 | 0.49           | 0.184  | 3.87  | <0.01  |
| Headache          | 1.5        | 0.5  | 1.0    | 66.67 | 0.47           | 0.149  | 6.71  | <0.001 |
| Giddiness         | 1.78       | 0.71 | 1.07   | 60.02 | 0.83           | 0.221  | 4.84  | <0.001 |
| Diarrhoea         | 1.56       | 0.66 | 0.89   | 57.24 | 0.33           | 0.111  | 8.00  | <0.001 |
| Constipation      | 1.71       | 0.57 | 1.14   | 66.67 | 0.69           | 0.261  | 4.38  | <0.01  |
| Anorexia          | 2.4        | 0.65 | 1.75   | 72.92 | 0.78           | 0.176  | 9.95  | <0.001 |
| Nervousness       | 1.83       | 0.78 | 1.06   | 57.57 | 0.64           | 0.151  | 7.01  | <0.001 |
| Irritability      | 2.0        | 0.91 | 1.09   | 54.55 | 0.92           | 0.196  | 5.55  | <0.001 |

**OVERALL RESULTS:** - 12 patients were markedly improved, 8 moderately improved and 5 were improved.

**DISCUSSION**

This study was aimed to assess the efficacy of *Chaturbeeja* powder in the patients of Dysmenorrhoea. All the 25 registered Patients got significant improvement in almost all the symptoms.( table- 2) Duration and intensity of pain, tenderness in breast, headache reduced significantly. According to Ayurveda *Vāta Prakopa* is the main factor for *Kashtartava* (Dysmenorrhoea ), the *Vatashamaka* (Pacifies Vata), *Mridu Shodhana* (do Purification softly), *Vedana Sthapana* (Relieve Pain), *Shoola hara*, actions of *Chaturbeeja* due to their *Snigdha Guna* 50% and *Ushna Virya* (100%) with *Vata-Kaphahara Doshakarman* (100%) may help to reduce the pain of the patients. Vitiating of Vata gets pacified by *Sneha Guna* and *ushna virya* as these are vata dosha suppressant due to having opposite qualities of vata. The individual ingredient of *Chaturbeeja churna* i.e *Trigonella foenum-graceum*, *Trachyspermum ammi*, *Lepidium sativum* is reported for its antispasmodic, analgesic and estrogenic properties and this spasmolytic activity mediated through calcium channel blockade may relieve the pain by direct action on the myometrium. It has proven significant anti-oxidant activity, which by free-radical scavenging, enhances the immunity and general strength of

the body. It increases the pain threshold and facilitates better pain tolerance capacity.

In the present study, significant improvement in the symptoms like nausea, vomiting, anorexia, diarrhoea, constipation was observed in all the patients.( table-2 ). In classical text of Ayurveda *seeds of methi, chandrashura, kalajajee, and yavani* are highlighted for their *Tikta Rasa* (75%) *deepana*, properties( Table-3) and indicated for *Ajirna, agnimandya*, conditions. Further the seeds of *L sativum*, *T. foenum-graceum*, *T ammi*, are reported for their antidiarrheal, germicide, antispasmodic, and antifungal agent. These drugs as shown in table 3 have *Vata-shamaka, Deepana, Shoolahara, Jwarahara, Garbhashaya-shodhaka* properties. *Chaturbeeja Churna* has pacified the vitiated *Vata Doshakarman* mainly due to *Ushna Virya*. Further, *Laghu Guna* (100%), *Ruksha Guna* (50%), pacified the slight *Kapha* vitiation. Hence, the properties of *Chaturbeeja Churna* can be made out as –*Laghu Guna Katu Rasa – Katu Vipaka - Ushna Virya* and *Vata-Kaphahara*. The drug mainly works with *Ushna Virya* as it is the most important property which determines the action of the drug. Individually, the drugs have the properties which help to cure dysmenorrhoea. The prepared *Churna* has bitter (*Tikta*) taste, thus having *Mukhashodhaka* and *Agnivardhaka* properties. So, it increases appetite, digestion and reduces nausea and vomiting.<sup>20-26</sup>

Table 3: Pharmacological properties of chaturbeeja churna

| Dravya              | Guna                  | Rasa               | Vipaka      | Virya        | Dosha karma         | Classical properties                                       | Classical uses   | Chemical composition  | Pharmacological actions   |
|---------------------|-----------------------|--------------------|-------------|--------------|---------------------|--|--|-----------------------|---|
| <i>Methika</i>      | <i>Laghu Snigdha</i>  | <i>Katu</i>        | <i>Katu</i> | <i>Ushna</i> | <i>V. K. ↓</i>      | Appetizer, Carminative, Emmenagogue. Astringent, Diuretic. | Anorexia, fever, diarrhea, Vomiting, bloating. Menstrual function. | Steroidal saponins    | Anti –diabetic  |
| <i>Chandrashura</i> | <i>Laghu, Snigdha</i> | <i>Katu, Tikta</i> | <i>Katu</i> | <i>Ushna</i> | <i>V. K. ↓</i>      | Appetizer, Diuretic and Emmenagogue.                       | Low backache, in rejuvenation.                                     | Glycosides Lepidimide | Oestrogenic action, Anti-oxidant, Anti-spasmodic, Diuretic.       |
| <i>Kalajaji</i>     | <i>Laghu, Ruksha</i>  | <i>Katu, Tikta</i> | <i>Katu</i> | <i>Ushna</i> | <i>V.K. ↓. P. ↑</i> | <i>Rajo-rodhanashaka</i> , Diuretic, Ecolbic.              | Flatulence, Dysmenorrhoea.   | Alkaloids Nigellimine | Oestrogenic action, Anti-histaminic, Anti-bacterial, Spasmolytic. |
| <i>Yavani</i>       | <i>Laghu,</i>         | <i>Katu, Tikta</i> | <i>Katu</i> | <i>Ushna</i> | <i>V. K. ↓ P. ↑</i> | Analgesic, Laxative.                                       | Flatulence, abdominal pain.  | Thymol                | Inhibits platelet aggregation, Muscle relaxant, Anti – oxidant.   |

Thymol, the major phenolic compound present in Ajowan (*Trachyspermum ammi*), has been reported to be a germicide, antispasmodic, and antifungal agent. Numerous studies have

been carried out to reveal the therapeutic potential of fenugreek in various pathological conditions of gastric disorders<sup>27-32</sup> Diosgenin extracted from the seeds of



*Trigonella Foenum-graceum* is used as a good antispasmodic, that it can be used for cramps, coughs and for muscular spasms.<sup>33,34</sup> *Trigonella Foenum-graceum* contains phyto-estrogen (which is a term applied to non-steroidal plant materials displaying estrogenic activity), It also possess sedative, anxiolytic, myo-relaxant and analgesic activity<sup>35, 36</sup>. *Lepidium sativum* seed extract possesses antidiarrheal and spasmolytic activities.(due to mediated possibly through dual blockade of muscarinic receptors and Ca<sup>++</sup> channels). *Trigonella foenum-graecum* (TFG) is assumed to have a stimulating effect on digestive process. *T. ammi* has been used in cooking and as medicine, primarily to control indigestion and flatulence. It is prescribed for colic, diarrhoea, antibacterial and other bowel disorders.. Extracts prepared in different solvents exhibited variable activity against *E. coli*, *P. aeruginosa*, *S. typhi* and *S. aureus* suggesting their centuries old usage in the treatment of gastrointestinal disorders. This historical use of seeds to cure various gastrointestinal disorders has also been scientifically proved in another study carried out by Kaur and Arora (2009) antispasmodic and broncho-dilating actions *in vitro*. The studies on calcium channel blockade that has been found to mediate the spasmolytic effects of plant materials and considered that this mechanism contributed to their observed result and supported the traditional use of *T. ammi* in hyperactive disease states of the gut such as colic and diarrhoea as well as in hypertension<sup>37-47</sup>

In the present study relief was noted in the complaint of fever( table-2). The influence of the volatile oil of *Nigella sativa* on reducing the body temperature of mice has been reported.<sup>32</sup> followed by a detailed review with elucidation of the mechanism of action.<sup>33</sup> In the present study relief was noted in the complaint of anxiety( table-2). *Nigella sativa* has been reported for its anti stress activity.<sup>34</sup> Above all, *N. sativa* seed is a promising source for active ingredients which act through suppression of the inflammatory mediators prostaglandins and leukotriens<sup>35</sup>.

The drug contains various minerals (Iron, Calcium, Phosphorus etc.) and vitamins (A, B, C) which are also necessary to maintain good health and proper functioning of the body systems. Thus, all these contribute to better health and improved psychology of the patients, allowing them better pain tolerance and even healthier stress-free life

#### SUMMARY & CONCLUSION:

Recent researches have also rationalized the uses of these drugs and further help us to scientifically prove the mode of action of the drug (*Chaturbeeja Churna*) in dysmenorrhoea. The formulation contains phyto-estrogens which have pronounced estrogenic activity better than estrogen thus combating the hormone deficiency. It has significant spasmolytic activity mediated through calcium channel blockade. Thus, relieves the pain by direct action on the myometrium. It has proven significant anti-oxidant activity, which by free-radical scavenging, enhances the immunity and general strength of the body. It increases the pain threshold and facilitates better pain tolerance capacity. The formulation has diuretic property which prevents the bloatedness, weight gain and reduces water retention symptoms. The drug alters prostaglandin production by altering arachidonic acid metabolism. Thus, has anti-inflammatory action and relieves the pain. It reduces the acidity of gastric secretions, thus preventing nausea and vomiting. It inhibits platelet aggregation, thus preventing clot formation. It reduces irritation of intestines to cure diarrhoea. - Analysis of the data

of the present study revealed *Chaturbeeja churna* has significant role in the management of *Kashtartava* (Dysmenorrhoea). Though the results are good, but further study on large numbers of patients should be done along with some specific investigations like Prostaglandin synthetase evaluation. Increasing body of evidences suggests that oxidative stress plays a vital role in the induction and progression of various disorders, the promising antioxidant effect of fenugreek needs to be explored in this area.

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