



Original Researcher Article

A CLINICAL STUDY TO EVALUATE THE EFFICACY OF MADHUKA CHURNA IN THE MANAGEMENT OF RAKTAPRADARA – CASE SERIES

Article History:

Name of Author:

Dr. Akshata B Kudari, MS (Ayu)¹, Dr. Sridevi Swamy, MS (Ayu)², Dr. Sonalika Hiremath, MS (Ayu)³, Dr. Sheela Mallikarjun, MS (Ayu)⁴, Dr. Ishwari Patil, MS (Ayu)⁵

Affiliation: ¹Assistant Professor, Department of Prasooti Tantra and Stree Roga, KLE Academy of Higher Education and Research, Deemed-to-be University, Shri B. M. Kankanawadi Ayurveda Mahavidyalaya, P.G. Studies & Research Centre, Shahapur, Belagavi, Karnataka, India.

²HOD and Professor, Department of Prasooti Tantra and Stree Roga, N. K. Jabshetty Ayurvedic Medical College & P.G. Research Center, Bidar, Karnataka, India.

³Assistant Professor, Department of Prasooti Tantra and Stree Roga, N. K. Jabshetty Ayurvedic Medical College & P.G. Research Center, Bidar, Karnataka, India.

⁴Professor, Department of Prasooti Tantra and Stree Roga, N. K. Jabshetty Ayurvedic Medical College & P.G. Research Center, Bidar, Karnataka, India

⁵Associate Professor, Department of Prasooti Tantra and Stree Roga, N. K. Jabshetty Ayurvedic Medical College & P.G. Research Center, Bidar, Karnataka, India.

Abstracts: Background & Objectives - Raktapradara (DUB) is one of the most commonly occurring gynecological disorder in woman of reproductive age. Various treatment modalities are described for excessive bleeding like HRT, anti-fibrinolytic drugs, etc. which have the increased rate of recurrence and risks of surgical intervention. Ayurveda describes a wide range of treatment principles and formulations in the management of Raktapradara (Dysfunctional uterine bleeding). Madhuka Churna (Licorice) mentioned in Bhavaprakasha in Streerogadhikara is one such formulation. The present clinical study was aimed to Evaluate the Efficacy of Madhuka Churna (Licorice) in the Management of Raktapradara (Dysfunctional uterine bleeding). **Methods** - This clinical study was conducted on 30 patients suffering from Raktapradara (Dysfunctional uterine bleeding) who were randomly selected from Prasuti Tantra & Stree Roga OPD, Sri Siddharoodhha Charitable Hospital, attached to N. K. Jabshetty Ayurvedic Medical College & P. G. Research Center, Bidar and internal administration of Madhuka Churna (Licorice) and Sharkara (Rock Sugar) with Tandulodaka (Rice water) was given for 3 months. The clinical assessment was done on the basis of subjective & objective parameters of Raktapradara (Dysfunctional uterine bleeding) - duration, amount, interval and pain and results were statistically analyzed and total effect of the therapy was assessed. **Results** - 60% patients were completely cured, 30% had marked improvement while 6.66% had moderate improvement and 3.33% had mild improvement after the treatment for 3 months. The results were statistically significant and clearly indicated that Madhuka Churna (Licorice) was effective in the management of Raktapradara (Dysfunctional uterine bleeding). **Interpretation & Conclusion** - The overall effect of the therapy concludes that Madhuka

Corresponding Author:

Dr. Akshata B Kudari

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Churna (Licorice) was found effective in Raktapradara (Dysfunctional uterine bleeding) due to its properties such as shonitasthapana, daha-shamaka, vata-pitta hara, etc. It not only regularizes the menstrual cycle to normalcy but also improves the overall health of the woman.

Keywords: Raktapradara, Excessive Bleeding, Dysfunctional Uterine Bleeding, Madhuka Churna, Tandulodaka, Ayurveda, Case Series.

INTRODUCTION

In Ayurveda (Ancient Vedic Medicine System), the woman is considered to be the 'Mother' and the 'Source of Creation'. The reproductive life of women starts with puberty and ends with menopause. In-between these two ends, there is a progenerative life having *Rutuchakra* (menstrual cycle). Menstrual bleeding is termed as *Rajasrava*. Woman having regular menstruation, possessing *Shuddha Aartava* (healthy menstrual blood), *Shuddha Yoni* (healthy female genital tract) and *Garbhashaya* (healthy uterus) can bestow a *Sreshtha Praja* (healthy progeny) [1]. Hence women's menstrual problems acquire a lot of significance. *Artava* (menstrual blood) is expelled from the uterus through vagina in biological rhythm of women during her reproductive period i.e. from menarche to menopause. Length of *Rutuchakra* (menstrual cycle) is usually twenty-eight to thirty days. A deviation of two to three days from the monthly rhythm is also quite common. The duration of bleeding is about five days and estimated blood loss is 20 to 80 ml [2]. The menstrual rhythm (length of the cycle) depends upon the hypothalamo-pituitary-ovarian function. If there is any variation from the normal menstrual cycle it leads to menstrual disorders which not only hampers the day-to-day activities of a woman but also affects the physical and emotional state of mind. Different gynecological disorders are discussed in Ayurvedic classics in *Yonivyapad* (Gynecological disorders) and *Artavavyapad* (Menstrual disorders). *Raktapradara*, a disease manifesting as excessive bleeding per vagina, is one of the most commonly

occurring gynecological disorder among the women of reproductive age. It varies in both amount and duration. About 10 to 30% of reproductive aged women are affected by *Raktapradara* (excessive menstrual bleeding). *Acharya Charaka* mentioned due to *Pradhirana* (excessive excretion) of *raja* (menstrual blood) it is named as *Pradara* [3]. *Charaka* describes its pathophysiology stating that the vitiated *vayu* along with *rakta*, reaches the *rajovaha sira* and further increases the *rajas* and causes *Raktapradara* [4]. Improper life style, isolated families, Emotional influence such as changes in environment, nervous tension, anxiety states, unsatisfied sex urge, marital upset, mental stress, increased use of drugs in the form of hormonal pills are the main causes leading to the disease. The disease is characterized by excess flow of blood out of the body and *Rakta* (blood) is known to be a vital substance of the body (*Jivana karma*), women thus require a rapid, safe and effective treatment. Despite of advances in modern science, management of gynecological disorders is not yet satisfactory, as various treatments prescribed in modern medicine like hormonal and surgical therapy, antiprostaglandins, antifibrinolytic agents etc have not proved their definite efficacy despite of high price and side effects. Due to limitations of medical therapy and surgical therapy, there is a necessity to have an integrated and comprehensive therapeutic intervention in Ayurveda which not only cures *Raktapradara* (*Dysfunctional Uterine Bleeding*) and prevents its recurrence but also helps in improving the general health of women. *Raktapradara*

(Dysfunctional Uterine Bleeding) is mainly due to *vata-pitta dosha* in association with *rakta*, hence *raktasthambaka* (haemostatic) and *vataashaman chikitsa* may be adopted. Ayurveda, describes a wide range of medicines/drugs which are *vata-pitta shamaka*, *balya* (strength), *brmhana* (nourishment), *vrshya* (aphrodisiac) and *rasayana* (rejuvenative) in the management of *Raktapradara* (excessive menstrual bleeding). *Madhuka Churna* (Licorice) and *Sharkara* (Rock sugar) along with *Tandulodaka* (Rice water) as *Anupana* (Adjuvant) mentioned in the context of *Raktapradara* (Dysfunctional Uterine Bleeding) in *Bhavaprakasha* [5] is one such formulation. Hence the present study was undertaken to analyze it clinically and statistically.

AIMS AND OBJECTIVES

Table no. 1: *Madhuka churna* (Licorice powder)

Drug Name	Family	Botanical Name	Parts used	Guna	Dosha karma
Madhuka [6] (Licorice powder)	Fabaceae	Glycyrrhiza glabra	Roots	Rasa: Madhura Guna: Guru, Snigdha Virya: Sheeta Vipaka: Madhura	Vata-pitta hara

Khanda-sharkara (Rock Sugar) – *Vata*, *Raktapitta nashaka* [7]

Tandulodaka (Rice water) – *Pittashamaka*, *Mutrala*, used as an *Anupana* (Adjuvant) [8]

Method of preparation of *Madhuka churna* (Licorice powder)

Ingredients:

Madhuka - *Glycyrrhiza glabra* Linn. – 1 part

Khandasharkara - 1 part

The drugs *Madhuka Churna* (Licorice) and *Sharkara* (Rock sugar) were cut into pieces and powdered separately by grinding and pounding in *khalva yantra* (mortar and pestle). When reduced to fine particle then sieved through fine cloth. *Vastragalita churna* (cloth-sieved powder) was then homogenously mixed by triturating it in a clean *khalva yantra* (mortar and pestle) to maintain the uniformity of the particle. Dosage – As mentioned in *Bhavaprakasha*, 1 *karsha matra* (12 grams) is the dosage of *Madhuka Churna* (Licorice) and *Sharkara* (Rock sugar) [5] which was administered in divided doses 4gm TID.

Method of preparation of *Tandulodaka* (Rice water) [8]

To evaluate the efficacy of *Madhuka Churna* in the management of *Raktapradara*.

MATERIALS AND METHODS

For the clinical study 30 Patients were selected from OPD of *Prasuti Tantra & Stree Roga* Department of Sri Siddharoodha Charitable Hospital, attached to N. K. Jabshetty Ayurvedic Medical College & P. G. Research Centre, Bidar. The drugs required for the study were procured from a GMP certified pharmacy under the supervision of Department of *Dravya Guna* specialist and the drug was prepared in the *Rasashala* of N. K. Jabshetty Ayurvedic Medical College & P. G. Research Center, Bidar under the supervision of *Rasashastra Bhaishajya Kalpana* specialist.

Ingredients:

1. *Tandula* (de-husked rice grains): 1 pala (48 gms)
2. Water: 8 parts (384 ml)

1 part of *Tandula* (de-husked broken rice grains) were taken in a clean vessel and soaked in 8 parts of water and kept overnight. Then it was macerated with hand and watery portion was decanted and collected as *Tandulodaka* (Rice water). **Dosage** – General dosage of *Tandulodaka* (Rice water) is 2 pala (96ml) [8]. The quantity of *Anupana* (adjuvant) with *churna* (powder) in *pittaja roga* is said to be 2 pala - 96ml. (*Sa. M. Kh.* 6/4). Thus the dosage of *Tandulodaka* (Rice water) administered was 2 pala.

Method of Collection of Data: In this clinical study, patients suffering from *Raktapradara* (Dysfunctional Uterine Bleeding) were thoroughly examined and diagnosed before selection. Only those patients fulfilling the inclusion criteria were selected.

Research Study Design: The study being a Single-Arm Open Clinical Trial, the patients were selected on the basis of Simple Randomized Sampling Method as per inclusion criteria.

Selection Criteria

Inclusion Criteria

- 1) From Menarche to Menopause
- 2) Prolonged and Excessive Menstrual Bleeding
- 3) Irregular and Intermenstrual Bleeding

Exclusion Criteria

1. On Hormone Replacement Therapy
2. With Intra-Uterine Contraceptive Device
3. Previously Diagnosed Bleeding Disorder
4. Severe Anemia of Unknown Etiology
5. History of Pelvic Pathology
6. History of Systemic and Metabolic Disorders

Consent – Obtained (attached)

Ethical Clearance – Obtained (attached)

Diagnostic Criteria

Diagnosis was made on the basis of *lakshanas* (symptoms) of *Raktapradara* (DUB)

- Heavy Menstrual Bleeding
- Irregular Menstrual Bleeding
- Prolonged Menstruation
- Intermenstrual Bleeding
- Pain and ache all over the body

Investigations: The following investigations were carried out in the patients to rule out any organic or systemic disease.

- CBP
- RBS
- Blood Group with Rh factor
- Urine Routine
- Bleeding Time
- Clotting Time
- HIV, HBsAg
- USG Abdomen and Pelvis

After diagnosis as *Raktapradara* (Dysfunctional uterine bleeding), the consent of patients was taken and they were administered *Madhuka churna* (Licorice) and *Sharkara* (Rock sugar) 4grams TID daily after food for 3 consecutive menstrual cycles with *Tandulodaka* 96ml (Rice water) as *anupana* (adjuvant). Follow-up was done every month after menstruation. 35 patients were registered out of which 5 patients were drop-outs and the study was carried out on 30 patients.

Table No. 2 – Drug Dose Design

Group	Drug	Dose	Anupana	Time of Adminis- -tration	Route of Adminis- -tration	Duration
Trial group (30 patients)	<i>Madhuka Churna</i> and <i>Sharkara</i>	4 gm	<i>Tandulodaka</i>	Thrice daily, after food	Orally	3 consecutive Menstrual Cycles

Assessment Criteria

The patients undergone treatment were assessed for the efficacy of *Madhuka Churna* (Licorice) on the basis of grading criteria of Subjective & Objective Parameters depicted below for improvement in specific symptomatology of *Raktapradara* (Dysfunctional Uterine Bleeding). Assessment was made every month after the cessation of menses for 3 consecutive menstrual cycles. During the study, all the patients were regularly analyzed and the notable changes were

duly recorded. Follow up was advised after the treatment.

Subjective Parameters

1. Duration of Menstrual flow
2. Interval of Menstrual cycle
3. Intermenstrual Bleeding
4. Pain in abdomen

Objective Parameters

1. Amount of Blood Loss in Number of pads used per day.

GRADINGS

Table No. 3 - Grading Criteria for Duration of Menstrual flow

Duration of Menstrual flow in no. of days	Grade
3 - 5 days	0
6 - 8 days	1
9 - 11 days	2
>11 days	3

Table no: 4 - Grading Criteria for Interval of Menstrual Cycle

Interval of Menstrual cycle in no. of days	Grade
28 - 35 days	0
20 - 27 days	1
<20 days	2
>35 days	3

Table no. 5 - Grading Criteria for Intermenstrual bleeding

Intermenstrual bleeding	Grade
Intermenstrual bleeding absent	0
Intermenstrual bleeding present	1

Table No. 6 - Grading Criteria for Pain in abdomen Grading

Pain in Abdomen	Grade
No pain	0
Mild	1
Moderate	2
Severe	3

Table No. 7 - Grading Criteria for Amount of blood loss in No. of pads / day

Amount of blood loss	No. of pads / day	Grade
1 – 2 pads / day		0
3 – 4 pads / day		1
5 – 6 pads / day		2
> 6 pads / day		3

Mode of action: *Na hi vatadrute vayum yoni sampradusyati* [9] which tells without role of *vata* there is no *stree roga* (Gynecological disorder). In *Raktapradara* (Dysfunctional uterine bleeding) there is *dusti* of *vatadosa*. The treatment should be directed to the treatment of *vata* and eradication of the cause. *Madhuka churna* acts as *vata-pitta hara* [6] and *asrahara*. It possesses *sheeta veerya* (cold potency)

and *rasayana* property that helps in stopping excessive bleeding and strengthens uterine lining. It is given known that the estrogen regenerates the endometrium and estrogenic like activity possessed by *Madhuka* (Licorice) aids in breaking down the pathogenesis of *Raktapradara* (Dysfunctional uterine bleeding).

RESULTS

Table No. 8 - Effect of Treatment

Parameters	BT Mean $\pm$ SD	AT	AT Mean $\pm$ SD	Df	t-value	Effective ness %	p-value	Rem arks
Duration of Menstrual Flow	1.466 $\pm$ 0.8603	AT1	1.133 $\pm$ 0.8603	29	3.808	22.72%	<0.001	H.S.
		AT2	0.5667 $\pm$ 0.626	29	9.000	61.36%	<0.0001	H.S.
		AT3	0.166 $\pm$ 0.379	29	10.933	88.63%	<0.0001	H.S.
Interval of Menstrual Cycles	1.166 $\pm$ 1.124	AT1	0.966 $\pm$ 1.124	29	2.693	17.14%	=0.006	H.S.
		AT2	0.433 $\pm$ 0.935	29	3.958	62.85%	<0.001	H.S.
		AT3	0.133 $\pm$ 0.571	29	4.883	88.57%	<0.0001	H.S.
Inter Menstrual Bleeding	0.2 $\pm$ 0.166	AT1	0.166 $\pm$ 0.166	29	1.000	16.66%	0.163	N.S.
		AT2	0.133 $\pm$ 0.133	29	1.439	33.33%	0.080	N.S.
		AT3	0.033 $\pm$ 0.033	29	2.408	83.33%	<0.011	S.S.
Pain in Lower Abdomen	1.6 $\pm$ 0.628	AT1	1.133 $\pm$ 0.628	29	5.037	29.16%	<0.001	H.S.
		AT2	0.5 $\pm$ 0.731	29	11.000	68.75%	<0.0001	H.S.
		AT3	0.2 $\pm$ 0.406	29	12.339	87.5%	<0.0001	H.S.
Amount of Menstrual Blood Loss	1.9 $\pm$ 0.731	AT1	1.5 $\pm$ 0.731	29	4.397	21.05%	<0.001	H.S.
		AT2	0.766 $\pm$ 0.678	29	14.297	59.64%	<0.0001	H.S.
		AT3	0.2 $\pm$ 0.406	29	17.405	89.47%	<0.0001	H.S.

The table presents the mean $\pm$ standard deviation (SD) of Duration of Menstrual flow, Interval of Menstrual Cycle, Intermenstrual Bleeding, Pain in Lower Abdomen and Amount of Menstrual Blood Loss recorded four different time points: BT

(baseline), AT1- after cessation of 1st menstrual cycle, AT2- after cessation of 2nd menstrual cycle, AT3- after cessation of 3rd menstrual cycle. The sample size (n) for all time points is 30.

1. Effect of Drug on Duration of Menstrual Flow: At the baseline (BT), the mean score was 1.466 ± 0.819 . At AT3, which decreased to 0.166 ± 0.379 . It showed highly significant differences (HS) with p value <0.0001 .
2. Effect of Drug on Interval of Menstrual Cycle: At the baseline (BT), the mean score was 1.166 ± 0.571 . It showed highly significant differences (HS) with p value <0.0001 .
3. Effect of Drug on Intermenstrual Bleeding: At the baseline (BT), the mean score was 0.2 ± 0.182 . It showed statistically significant differences

(SS) with p value <0.011 .

4. Effect of Drug on Pain in Lower Abdomen: At the baseline (BT), the mean score of the symptoms was 1.6 ± 0.406 . It showed highly significant differences (HS) with p value <0.0001 .

Effect of Drug on Amount of Menstrual Blood Loss: At the baseline (BT), the mean score was 1.9 ± 0.406 . It showed highly significant differences (HS) with p value <0.0001 .

Table No - 9: Overall Effect of Treatment

	BT Mean $\pm$ SD	AT	AT Mean $\pm$ SD	Df	t value	Effectiveness	P value	Remarks
Overall	6.33 ± 2.46	AT1	4.9 ± 2.68	29	7.319	22.63%	<0.001	H.S.
		AT2	2.4 ± 2.22	29	13.499	62.10%	<0.0001	H.S.
		AT3	0.73 ± 1.31	29	16.754	88.42%	<0.0001	H.S.

The table presents the mean $\pm$ standard deviation (SD) of Overall Effect of the Treatment. At the baseline (BT), the mean score of the symptoms

was 6.33 ± 2.46 where the mean reduced to 0.73 ± 1.31 . It showed highly significant differences (HS) with p value <0.0001 .

Table No - 10: Total Effect of Treatment

	AT1		AT2		AT3	
	No. of Pts	%	No. of Pts	%	No. of Pts	%
Cured (100%)	0	0	5	16.66%	18	60.00%
Marked Improvement (>75 To <100%)	0	0	6	20.00%	9	30.00%
Moderate Improvement (>50 To 75%)	3	10.00%	10	33.33%	2	06.66%
Mild Improvement (>25 To 50%)	11	36.66%	8	26.66%	1	03.33%

No Change <25%	16	53.33%	1	03.33%	0	0
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In the present study total effect of the treatment was assessed on the basis of percentage of relief obtained. It showed that, in trial group at the end of

DISCUSSION

Raktapradara (Dysfunctional uterine bleeding) is a disease manifesting as excessive bleeding per vagina. *Charaka* explained *Pradara* as a separate disease with its management in *Yoni Vyapat Chikitsa* (Gynecological disorders) [10]. It is characterized by *Artava Ati Pravrutti* (excessive menstrual flow) [3] *Deerga Kala Pravrutti* (prolonged menstrual bleeding) *Anruta Kala Pravrutti* (irregular menstrual bleeding), [11] *Daha* (burning sensation) in *Adhovankshana pradesha* (lower abdominal region), [12] *Sroni* (pelvis), *Prushta* (back) and *Kukshi* (abdomen), *Shoola* (pain) in *Garbhashaya* (Uterus) *Angamardha* (bodypain) [13] etc. It is a *Pitta Pradhana Tridoshaja Vyadhi*. By considering the above *lakshanas* (symptoms), *Raktapradara* can be correlated to Dysfunctional Uterine Bleeding. DUB is the state of abnormal uterine bleeding following anovulation due to dysfunction of hypothalamo-pituitary - ovarian axis. It is due to the imbalance in the estrogen and progesterone hormone which results in irregular shedding of endometrium and prolonged, heavy, irregular and intermenstrual bleeding. It varies in both amount and duration. Present study was planned to evaluate the clinical effect *Madhuka Churna* (Licorice) and *Sharkara* (Rock Sugar) along with *Tandulodaka* (Rice water) as *Anupana* (adjuvant) mentioned in the context of *Raktapradara* (Dysfunctional Uterine Bleeding) in *Bhavaprakasha* [5]. *Madhuka churna* (Licorice powder) is a drug having *madhura rasa* (sweet taste), *guru snigdha guna* (heavy unctuous nature), *sheeta virya* (cold potency) and *madhura vipaka* (sweet taste conversion after digestion). It is *vata-pitta shamaka* [6]. It is included in *Shonithasthapana* (hemostatic), *Angamardaprasamana Varga* (reduces body pain), *Dourbhagyanashana* (removes *doshas*) and *Garbhabrmhana* (nourishes the uterine cavity). *Madhuka* has pharmacological actions like antiulcer, antioxidant, anti-inflammatory [14]. It nourishes the *rasa dhatu* (nutrient plasma), *artava* (menstrual blood) and *rakta dhatu* (blood tissue) and manifesting menstrual cycles to normalcy. *Glabridin* and *glabrene* possess estrogen-like activity which helps to stabilize the endometrium and prevent

treatment, 60% were cured, 30% had marked improvement, 06.66% were moderately improved and 03.33% had mild improvement.

irregular bleeding and spotting. Estrogen also increases the levels of clotting factors. *Glycyrrhizin*, an anti-inflammatory compound has also been found as the first plant-based inhibitor of thrombin suggesting its anti-coagulant activity which promotes vasoconstriction of blood vessels and eventually stopping the blood flow and inflammation. *Sharkara* (Rock Sugar) [7] is having *madhura rasa* (sweet taste), *susheeta virya* (cold potency), *madhura vipaka* (sweet taste conversion after digestion). It is *asahrut* (reduces bleeding), *dahahrut* (reduces burning sensation) also indicated in *pitta-asra vyadhi* due to which it helps to stop bleeding. It reduces *agnimandhya*, promotes *rasa dhatu vrudhi* (nutrient plasma), *artava* (menstrual blood) and reduces *Raktapradara* (Dysfunctional uterine bleeding). Rich in various minerals, vitamins and amino acids, consumption of *sharkara* (Rock Sugar) mainly regenerates blood circulation and prevents other complications associated with anemia like dizziness, fatigue and weakness. *Tandulodaka* (Rice water) [15] strengthens body immunity and balance *pitta*, having *madhura rasa*, *kashaya anurasa* and *vata pitta shamaka* as well as *rakta stambhaka karma* (hemostatic property), apart from reducing menstrual flow, it also contributes to establishing hormonal balance. *Madhuka Churna* (Licorice powder) is statistically significant and thus controls the duration and amount of bleeding. *Glabrene* stabilizes the endometrium and prevents irregular bleeding and help in regularizing interval of menstrual cycles to normalcy. It also reduces pain and relaxes uterine muscles which helps to reduce the pain in lower abdomen in *Raktapradara* (Dysfunctional uterine bleeding). The present study shows that *sheeta virya dravya upayoga* helps in reducing the symptoms. The change seen in study was due to the properties of the drugs such as *vata-pitta shamaka*, *balya*, *brmhana*, *vrshya* and *rasayana*, it is hemostatic in action, analgesic & anti-inflammatory which may help in reducing the symptoms. Further studies in a new direction are awaited-for.

Limitations: This study was conducted for 30 patients at a particular region for a short duration. It was effective in reducing the symptoms of Dysfunctional uterine bleeding when given for 3 consecutive cycles. This cannot be generalized to a larger scale population.

Need for further study: To identify the in-depth mechanism of action of *Madhuka churna* and *Sharkara* with *Tandulodaka* in *Raktapradara*, this study can be conducted in larger sample for a longer duration for scientific validation.

CONCLUSION

Raktapradara is mainly due to *vata-pitta dosha* in association with *rakta* (blood). *Madhuka Churna* (Licorice powder) is *Rakta-sthapaka*, *Deepana-paachana* and *Vata-shamaka dravya* having *sheeta virya* (cold potency), *madhura rasa* (sweet taste), *madhura vipaka* and *sthambhaka* (hemostatic) properties. After statistical analysis, the results showed that *Madhuka Churna* (Licorice powder) was effective in the management of *Raktapradara* (Dysfunctional uterine bleeding). 60% were completely cured, 30% had marked improvement, 06.66% had moderate improvement and the rest 03.33% were having mild improvement in the symptoms. Thus, the formulation *Madhuka Churna* (Licorice powder) effectively helps in breaking down the pathogenesis of *Raktapradara* (Dysfunctional uterine bleeding) and prevents its recurrence. It effectively reduced duration of menstrual flow, amount of menstrual blood loss, regularized the interval of menstrual cycle, reduced intermenstrual bleeding and reduced pain abdomen. Management of *Raktapradara* (Dysfunctional uterine bleeding) through an integrative Ayurvedic approach proved to be successful. *Madhuka Churna* (Licorice) not only regularizes the menstrual cycle to normalcy but also improves the overall health of the woman.

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