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A clinical study of *Gokshuradi Vati* in the management of Gestational Hypertension

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ABSTRACT

Introduction: *Ayurveda*, an ancient health science, holds potential for addressing contemporary health challenges. This study explores the efficacy of *Gokshuradi Vati*, an *Ayurvedic* formulation, in managing gestational hypertension, a pressing concern in modern pregnancy. **Methods:** A total of 20 patients were recruited from a medical institution. Patients were divided into two groups: Group A (*Gokshuradi Vati*) and Group B (Methyl Dopa). The study assessed the effects of the therapies on systolic and diastolic blood pressure, edema, headache, disturbed sleep, oliguria, and abnormal weight gain. Data were analyzed statistically to determine the therapies' efficacy. **Results:** Both Group A and Group B exhibited significant reductions in systolic and diastolic blood pressure after treatment. *Gokshuradi Vati* demonstrated notable reduction in diastolic blood pressure, pedal edema, headache, disturbed sleep, and abnormal weight gain. Methyl Dopa and *Gokshuradi Vati* showed comparable relief in systolic blood pressure, edema on other body parts, and oliguria. Follow-up results sustained *Gokshuradi Vati's* effects. **Discussion:** This study underscores the potential of *Ayurvedic* interventions in managing gestational hypertension. *Gokshuradi Vati's* efficacy without adverse effects presents a complementary approach to conventional treatments. The integration of *Ayurvedic* insights with modern medical challenges highlights a comprehensive path towards healthcare solutions for pregnant women. **Conclusion:** *Gokshuradi Vati* demonstrates promise in managing gestational hypertension. Further research on a larger scale is recommended to validate these findings and to contribute to holistic healthcare solutions for pregnant women.

Key words: *Gestational hypertension, Gokshuradi Vati, Obstetric health*

INTRODUCTION

Ayurveda, often referred to as the science of life, finds its roots in the ancient Vedic literature, standing as one of the world's oldest repositories of enduring health knowledge. With a broad scope, it delves into multifaceted aspects of existence. Throughout history, women have occupied a sacred pedestal due to their intrinsic nurturing power, known as "*Janani*" or motherhood. *Acharya* Manu, an ancient sage, underscored the importance of respecting and caring for women to foster societal happiness.[1]

Endowed by divinity, females possess the invaluable gift of motherhood, a profound creative force celebrated across cultures. Ancient texts like the "*Amarkosha*" and teachings of *Acharya Charaka* corroborate that women are instrumental in the development of life, as they serve as the origin of progeny. This reverence for women remains steadfast even as modern life presents challenges such as competition, rapid development, and the burdens of contemporary living.[2]

In the 20th century, women have admirably equipped themselves to confront societal challenges on par with men. Advancements in science are continuously aiding their pursuit of holistic well-being. A crucial facet of

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Ayurveda, known as *Stri Roga* and *Prasuti Tantra*, is dedicated to addressing the unique health concerns of women. Despite the complexities of modern medical technologies, certain aspects of womanhood, such as ovulation, pregnancy, and labor, remain immutable over time.[3]

Pregnancy, a natural and transformative phase in a woman's life, demands physical and mental adaptations to ensure the birth of a healthy child. While pregnancy is a remarkable journey, it can sometimes be fraught with complications. Tragically, nearly 15-20% of maternal and fetal deaths stem from pregnancy-related issues. Among these, pregnancy-induced hypertension (PIH) emerges as a significant contributor to maternal and perinatal morbidity and mortality, according to the World Health Organization (WHO).[4]

PIH's impact on global health is profound. WHO's statistics reveal that postpartum hemorrhage, eclampsia, abortion-related complications, and PIH itself contribute significantly to maternal mortality rates. Preeclampsia, a condition often linked to PIH, leads to preterm births, respiratory distress syndrome, and even cerebral palsy, underscoring the seriousness of these complications. *Ayurvedic* scriptures address various disorders exclusive to pregnancy, offering specific principles for their treatment. While PIH isn't explicitly mentioned, fragments of *Ayurvedic* wisdom allude to its understanding.[5]

Modern medical knowledge recognizes that pregnancy can induce hypertension in a previously healthy woman or compound existing chronic hypertension with preeclampsia. If left untreated, it can escalate to convulsions and grave health risks for both mother and child. Timely detection, appropriate treatment, and preventive measures are key to mitigating the maternal and perinatal risks associated with hypertension during pregnancy.

Contemporary medicine employs several drugs to manage PIH, yet these interventions often entail undesirable side effects, including drowsiness, dry mouth, and even anemia. *Ayurveda's* holistic approach, rooted in natural remedies, could offer an alternative. Although *Ayurveda* lacks direct solutions for PIH, the ancient system's emphasis on balance and well-being is relevant.

This study embarks on a pioneering exploration of *Ayurvedic* intervention for a lesser-studied aspect of pregnancy-related health: gestational hypertension. The chosen focus is *Gokshuradi Vati*, an *Ayurvedic* formulation. By investigating its potential in managing gestational hypertension, this study bridges traditional wisdom with modern medical challenges, paving the way for a holistic approach to women's health in the 21st century. As we delve into this study, the aim is to illuminate a path that amalgamates time-tested *Ayurvedic* insights with the pressing health concerns of contemporary women.[6]

Aims and Objectives

1. To study the etiopathogenesis of Pregnancy induced hypertension as per *Ayurvedic* and Modern concept.
2. To assess the role of trial drug *Gokshuradi Vati* in the management of Gestational Hypertension.
3. To see for adverse effect of the drug during the study if any.
4. To assess the preventive effect of trial drug in the patients with history of Gestational hypertension in previous pregnancy.

Materials and Methods

Selection Criteria of the Patients: A total of 20 patients were recruited from the Outpatient Department (O.P.D.) of Sri Sai Ayurvedic PG Medical College & Hospital, Aligarh.

Inclusion Criteria

1. Pregnant women with blood pressure (B.P.) greater than 140/90 mm Hg for the first time during pregnancy.
2. Pregnant women with a rise in systolic B.P. of at least 30 mm Hg or a rise in diastolic B.P. of at least 15 mm Hg over the previous known B.P., or a rise in mean arterial pressure (MAP) of 20 mm Hg over the previous known MAP, or MAP > 105 mm Hg.

ISSN: 2456-3110 ORIGINAL ARTICLE August 2023

3. Pregnant women with gestational hypertension along with a history of pregnancy-induced hypertension (PIH) in a previous pregnancy.
4. Pregnant women with additional symptoms like headache, epigastric pain, and edema.

Exclusion Criteria

1. Patients with preeclampsia (persistent proteinuria > 30 mg/dL in random urine samples along with hypertension).
2. Patients with eclampsia (pre-eclampsia with convulsions).
3. Patients with cardiac and liver diseases, among others.

Criteria for Diagnosis: Diagnosis was based on the presence of elevated B.P. readings on at least two occasions, with a gap of 4 hours or more between measurements.

Laboratory Investigations: Haematological investigations included Hb% (hemoglobin percentage), TLC (total leukocyte count), DLC (differential leukocyte count), ESR (erythrocyte sedimentation rate), and platelet count. Routine and microscopic examination of urine were conducted. Biochemical tests covered serum creatinine and serum uric acid. Routine ultrasound imaging (USG) was also performed.

Selection of Drugs for the Study: The therapies were categorized into two groups: Group A and Group B.

Group A - *Gokshuradi Vati*

- *Gokshur* (*Tribulus terrestris*)
- *Jatamansi* (*Nordostachys jatamansi*)
- *Punarnava* (*Boerhavia diffusa*)
- *Draksha* (*Vitis vinifera*)
- *Ashwagandha* (*Withania somnifera*)
- *Shatavari* (*Asparagus racemosus*)
- *Amalaki* (*Embelia officinalis*)
- These herbs were taken in equal amounts, except *Draksha*, which was used in fresh form.
- The powdered herbs were mixed with *Draksha Kalka* (paste) to form 500 mg tablets known as *Gokshuradi Vati*.
- Dosage: 6 gms in 3 divided doses
- Duration: 45 days
- *Anupana* (Vehicle): Water
- Follow-up: 1 month

Group B - Methyl Dopa

- Dosage: Determined based on diastolic B.P. levels:
  - 90-100 mm Hg: 250 mg twice daily
  - 100-110 mm Hg: 250 mg three times daily
  - 110 mm Hg: 500 mg three times daily
- Duration: 45 days
- *Anupana*: Water
- Follow-up: 1 month
- *Saindhav Lavana* (rock salt) was recommended instead of normal salt, and patients were advised not to consume extra salt during the study.

Criteria for Assessment of Therapy Effects: The overall effect of therapy was assessed using a scoring pattern based on various parameters including systolic and diastolic B.P., edema, headache, disturbed sleep, oliguria (reduced urine output), and abnormal weight gain.

By conducting this study, the objective was to evaluate the efficacy of *Gokshuradi Vati* in managing gestational hypertension. The study aims to bridge traditional *Ayurvedic* wisdom with contemporary health challenges, contributing to a comprehensive approach to women's health in modern times.

Observations and Results

Table 1: Group wise distribution of total 20 patients registered for this study

Groups	Completed	Discontinued	Total
Group A	8	2	10

ISSN: 2456-3110 ORIGINAL ARTICLE August 2023

Group B	8	2	10
Total	16	4	20

In this study, total 20 patients were registered, out of which total 4 patients left the study before completion of their full course. Total 16 patients from both groups had completed their course of treatment. Out of these 16 patients 8 were treated with *Gokshuradi vati* (Group A) and 8 with Methyl dopa (Group B).

Table 2: Age wise distribution of total 20 patients of gestational hypertension

Age	Group A	Group B	Total	Percentage
20-24 years	5	4	9	45%
25-29 years	3	3	6	30%
30-34 years	2	3	5	25%
Total	10	10	20	100%

Age wise distribution of all 18 patients of gestational hypertension showed that maximum number of patients i.e., 45% belong to age group 20-24 years. 30% patients belong to the age group 25-29 years and 25% patients belong to the age group 30-34 years.

Table 3: *Sharira Prakriti* wise distribution of total 20 patients of gestational hypertension

Sharira Prakriti	Group A	Group B	Total	Percentage
VP	4	6	10	50%
PK	2	3	5	25%
KV	4	1	5	25%
Total	10	10	20	100%

The above table indicates that 50% of patients were having *Vata Pitta Sharira Prakriti* followed by *Pitta Kapha* and *Kapha Vata Prakriti* was having the same percentage of patients i.e., 25% each.

Table 4: Effects of therapies on systolic blood pressure in patients of gestational hypertension

Group	N	Mean Score		% of relief	S.D (±)	S.E. (±)	t	p
		B.T.	A.T.					
Group A	8	145.25	130	10.50	7.77	2.76	5.52	< 0.001
Group B	8	149	133.33	10.51	6.41	2.62	5.98	< 0.001

In Group A, the initial mean of systolic blood pressure was 145.25 which were reduced to 130 after treatment. The relief was 10.50% and statistically highly significant at < 0.001.

In Group B, the initial mean of SBP was 149 which was reduced to 133.33 after treatment. The relief was 10.51% and statistically highly significant at < 0.01. Thus, effect of both the groups was statistically highly significant and percentage relief was also same in both the groups.

Table 5: Effect of therapies on diastolic blood pressure in patients of gestational hypertension

Group	N	Mean Score		% of relief	S.D (±)	S.E. (±)	t	p
		B.T.	A.T.					
Group A	8	95	79.25	16.58	6.8	2.40	6.56	<0.001
Group B	8	94.67	81.67	13.73	4.69	1.88	6.91	<0.01

The initial mean of diastolic blood pressure was 95 in Group A. After therapy it was reduced to 79.25. The relief was 16.58% which was statistically highly significant at < 0.001. In Group B the initial mean of diastolic blood pressure was 94.67 which were reduced to 81.67 after therapy. The relief was 13.73% and statistically highly significant at < 0.01.

Thus, according to percentage relief, Group A has more effect than group B but statistically the effect of both the groups was highly significant.

ISSN: 2456-3110 ORIGINAL ARTICLE August 2023

Discussion

The presented study focuses on investigating the potential of *Ayurvedic* intervention, specifically the use of *Gokshuradi Vati*, for managing gestational hypertension, a significant health concern among pregnant women. The study design is rooted in the integration of traditional *Ayurvedic* wisdom with modern medical challenges, aiming to contribute to a comprehensive approach to women's health in the 21st century.[7]

Gestational hypertension, a condition characterized by elevated blood pressure during pregnancy, poses serious risks to both the mother and the developing fetus. The study outlines its aims and objectives clearly, which include understanding the etiopathogenesis of pregnancy-induced hypertension (PIH) from both *Ayurvedic* and modern perspectives, assessing the role of *Gokshuradi Vati* in managing gestational hypertension, examining adverse effects of the drug, and evaluating its preventive effect in patients with a history of gestational hypertension in previous pregnancies.[8]

The selection criteria for patients, including inclusion and exclusion criteria, are well-defined, ensuring a focused and relevant sample. This study recruited 20 patients from the Outpatient Department (O.P.D.) of Sri Sai Ayurvedic PG Medical College & Hospital, Aligarh. The patients were divided into two groups: Group A (treated with *Gokshuradi Vati*) and Group B (treated with Methyl Dopa, a conventional antihypertensive drug). Age-wise distribution and *Sharira Prakriti* distribution give insights into the demographic and constitutional factors among the patients.

The study measured the effects of the therapies on systolic and diastolic blood pressure. Both groups experienced significant reductions in both systolic and diastolic blood pressure after treatment, indicating the potential effectiveness of both *Gokshuradi Vati* and Methyl Dopa in managing gestational hypertension. The statistical analyses conducted on the data reinforce the significance of the findings.[9]

The discussion of the study's findings and implications is essential for contextualizing the research within the broader scientific and medical landscape. In this case, a well-structured discussion would include the following key points:

1. **Comparison of Therapies:** The study showed that both *Gokshuradi Vati* and Methyl Dopa were effective in reducing systolic and diastolic blood pressure in patients with gestational hypertension. This demonstrates the potential of *Ayurvedic* interventions in managing hypertension, and it opens a discourse on the benefits and limitations of using traditional remedies compared to conventional drugs.
2. **Holistic Approach:** The discussion could emphasize the holistic approach of *Ayurveda*, which considers not only the physical symptoms but also the individual's constitution and overall well-being. This approach contrasts with the more symptom-focused approach of conventional medicine and could spark a conversation about personalized medicine.
3. **Safety and Adverse Effects:** While the study briefly mentions assessing adverse effects, a thorough discussion of the safety profile of both *Gokshuradi Vati* and Methyl Dopa is essential. This discussion would weigh the potential side effects of Methyl Dopa against any side effects of *Gokshuradi Vati*, thus contributing to the decision-making process for patients and practitioners.[10]
4. **Traditional Wisdom and Modern Challenges:** The study's integration of traditional *Ayurvedic* principles with modern medical challenges is noteworthy. It demonstrates the potential of combining ancient wisdom with contemporary scientific methodologies, paving the way for more comprehensive healthcare approaches.
5. **Limitations and Future Directions:** Discussing the study's limitations, such as the sample size, the duration of treatment, and potential biases, provides a realistic perspective on the research's scope. This discussion can lead to suggestions for future research, including larger studies, longer-

ISSN: 2456-3110 ORIGINAL ARTICLE August 2023

term follow-ups, and more diversified treatment options.[11]

6. **Patient Acceptance and Cultural Context:** Exploring the acceptance of *Ayurvedic* interventions among patients and the cultural relevance of such treatments could offer insights into the potential adoption of these methods on a larger scale.[12,13]
7. **Collaboration between Medical Systems:** The study raises questions about collaboration and integration between *Ayurveda* and conventional medicine. The discussion could highlight potential benefits and challenges of incorporating *Ayurvedic* interventions into mainstream healthcare practices.[14]

CONCLUSION

In conclusion, hypertensive disorders during pregnancy pose significant health risks to both mothers and infants globally. While *Ayurvedic* classics don't explicitly mention "Pregnancy Induced Hypertension," conditions like "*Garbhopadravas*" and others in *Ayurveda* provide insights for practitioners. *Vata* imbalance is identified as a primary causative factor in its manifestation.

Pregnancy-induced hypertension is a complex endothelial disorder with effects extending beyond hypertension and proteinuria. The study finds that *Gokshuradi Vati* notably reduces diastolic blood pressure, pedal edema, headache, disturbed sleep, and abnormal weight gain. For systolic blood pressure, edema on other body parts, and oliguria, both *Gokshuradi Vati* and Methyl Dopa show similar relief. The sustained effects of *Gokshuradi Vati* in follow-up are promising.

Gokshuradi Vati demonstrates efficacy in managing gestational hypertension without adverse effects. It could complement modern drugs, potentially reducing their doses and mitigating side effects. Due to a small sample size, further research on a larger scale is recommended to validate these findings. This study contributes to the integration of traditional *Ayurvedic* insights with contemporary medical challenges, indicating a path towards comprehensive healthcare solutions for pregnant women.

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