

## EFFICACY OF AYURVEDIC DRUGS ON THE 150 PATIENTS OF DIABETIC NEPHROPATHY

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### ABSTRACT

It has been estimated that the global burden of type 2 diabetes mellitus (T2DM) for 2010 would be 285 million people (2010) which is projected to increase to 438 million in 2030; a 65 % increase. Similarly, for India this increase is estimated to be 58%, from 51 million people in 2010 to 87 million in 2030<sup>[1-2]</sup>. The impacts of T2DM are considerable: as a lifelong disease, it increases morbidity and mortality and decreases the quality of life<sup>[3]</sup>. At the same time, the disease and its complications cause a heavy economic burden for diabetic patients themselves, their families and society. A better understanding about the cause of a predisposition of Indians to get T2DM is necessary for future planning of healthcare, policy and delivery in order to ensure that the burdens of disease are addressed<sup>[4]</sup>. This chapter will focus on type T2DM and will provide a description of prevalence and incidence of T2DM in India; it will describe the health related complications, along with its various risk factors and recommended treatment. It will discuss current management practices and government policies for T2DM in India as well as identify policy and research gaps. Diabetes Morbidity and Mortality in India-Responsible for 109 thousand deaths in 2004 and 1.157 million years of life lost in 2004<sup>[4-5]</sup> 2.263 million disability adjusted life years (DALYs) in India during 2004(ICMR 2006) Type 2 diabetes is an ever-growing problem worldwide. Approximately 40% of the patients with type 2 diabetes will develop diabetic kidney disease. Diabetic nephropathy is a specific form of renal disease. It is a major cause of renal insufficiency and ultimately of death. The present study has been carried out to prove the efficacy of Ayurvedic drugs in the management of diabetic nephropathy, which can be helpful in reducing the need of dialysis and avoiding or delaying renal transplantation. Diabetic nephropathy is a specific form of renal complication of Diabetes Mellitus (DM), a major cause of death and disability among diabetics. It is observed that even the patients having well-controlled diabetes suffer from diabetic nephropathy. Diabetic nephropathy accounts for approximately 14% of all deaths in diabetic patients, and some 25% of those developing diabetes under the age of 30 die from renal failure due to diabetic nephropathy.<sup>[6]</sup> This is also a major cause of chronic renal failure as it accounts for 20-40% patients of chronic renal failure.<sup>[7]</sup> A total of 150 patients of this disease were treated in IPD (Group A) and OPD (Group B) Nandlalpura Hospital and local regional area of lokmanya nagar under the guidance of Dr S.K.Das Adhikari. Ayurvedic formulations including Gokshuradi Guggulu, Bhumyamalaki, Punarnavastak Kwath, Vasa and Shilajitvadi Vati were given to all the patients for 3 months. Group A patients were given special planned food. Results were analyzed statistically using "t" test. In group A patients, highly significant reduction was found in the values of serum creatinine, blood urea and urinary excretion of albumin. Marked improvement was found in the patients' general physical well-being, together with reduction in symptoms, in group A patients. This shows the importance of Pathyapathya in Ayurvedic management of the disease. This management may bring some new hope to the patients of diabetic nephropathy, which usually terminates to chronic renal failure and ultimately to death. Further studies are being carried out in this regard. The authors found some encouraging results in the patients of diabetic nephropathy with certain Ayurvedic treatments during clinical practice. These significantly correct albuminuria, which is the cardinal feature of diabetic nephropathy, and improve renal function which is evident by reduction in serum creatinine. In addition, the treatments also improve the general condition of the patient. Further studies are being carried out in this regard

**Keywords:** Diabetic Nephropathy

### INTRODUCTION

Morbidity and Mortality of Diabetic Nephropathy in India responsible for 109 thousand deaths in 2004 and 1.157 million years of life lost in 2004<sup>[4-5]</sup> 2.263 million disability adjusted life years (DALYs) in India during 2004(ICMR 2006) Type 2 diabetes is an ever-growing problem worldwide. Approximately 40% of the patients with type 2 diabetes will develop diabetic kidney disease. Diabetic nephropathy is a specific form of renal disease. It is a major cause of renal insufficiency and ultimately of death. The present study has been carried out to prove the efficacy of Ayurvedic drugs in the management of diabetic nephropathy, which can be helpful in reducing the need of dialysis and avoiding or delaying renal transplantation. Diabetic nephropathy is a specific form of renal complication of Diabetes Mellitus (DM), a major cause of death and disability among diabetics. It is observed that even the patients having well-controlled diabetes suffer from diabetic nephropathy.

Diabetic nephropathy accounts for approximately 14% of all deaths in diabetic patients, and some 25% of those developing diabetes under the age of 30 die from renal failure due to diabetic nephropathy.<sup>[6]</sup> This is also a major cause of chronic renal failure as it accounts for 20-40% patients of chronic renal failure.<sup>[7]</sup> A total of 150 patients of this disease were treated in IPD (Group A) and OPD (Group B) Nandlalpura Hospital and local regional area of lokmanya nagar under the guidance of Dr S.K.Das Adhikari. Ayurvedic formulations including Gokshuradi Guggulu, Bhumyamalaki, Punarnavastak Kwath, Vasa and Shilajitvadi Vati were given to all the patients for 3 months. Group A patients were given special planned food. Results were analyzed statistically using "t" test. In group A patients, highly significant reduction was found in the values of serum creatinine, blood urea and urinary excretion of albumin. Marked improvement was found in the patients' general physical well-being, together with reduction in symptoms, in group

A patients. This shows the importance of Pathyapathya in Ayurvedic management of the disease. This management may bring some new hope to the patients of diabetic nephropathy, which usually terminates to chronic renal failure and ultimately to death. Further studies are being carried out in this regard. The authors found some encouraging results in the patients of diabetic nephropathy with certain Ayurvedic treatments during clinical practice. These significantly correct albuminuria, which is the cardinal feature of diabetic nephropathy, and improve renal function which is evident by reduction in serum creatinine. In addition, the treatments also improve the general condition of the patient.

#### Aims and objectives

- Efficacy of the Ayurvedic Drugs in the treatment of diabetic nephropathy.
- This can provide a future possibility of a treatment to a large group of population suffering from diabetic nephropathy, which can be helpful in reducing the need of dialysis, avoiding or delaying renal transplantation. Which show that certain Ayurvedic treatments significantly correct albuminuria which is the cardinal feature of diabetic nephropathy and improve the renal function?

#### Criteria of Assessment

- All the patients were clinically assessed before and after treatment.
- Changes in symptoms, albuminuria, serum creatinine and blood urea were observed.
- Results were analyzed statistically

#### Inclusion Criteria

- Patients were selected from the OPD and IPD Government Asthang Ayurveda College and Hospital, Nandlalpura under the clinical guidance of Dr S.K.Adhikari Indore MP.
- Patients with positive clinical history of type 2 DM having the clinical features of diabetic nephropathy like albuminuria, raised serum creatinine and blood urea were included.

#### Exclusion Criteria

Patients having any other associated clinical conditions, except complications of diabetes, were not included in the present study.

#### Material and Method

Patients were being treated in OPD as well as IPD. A total of 150 patients of diabetes nephropathy had been registered for the study during the last 3 years.the patients were treated with the following:

Gokshuradi Guggulu (containing mainly Goksura, Guggulu, Triphala, Trikatu, Musta): 1 g three times a day; Bhumyamalaki: 3 g two times a day; Punarnavastak Kwath: 20-20 ml two times a day; Vasa leaves' powder: 3 g two times a day; and Shilajativadi Vati (modified) (containing mainly Shilajatu, Guggulu and Guduchi): 1 g thrice a day. Medicines were prepared under expert supervision and purchased from Indore Ayurveda pharmacy, Indore.The patients were kept under two Groups. Group A patients, treated as indoor patients, were kept under strict supervision and were given a special planned diet (no grains except rice, no beans except mug beans, no oil except sesame oil, no ghee except cow ghee, cow's milk up to 400 ml/day, chyavanprash with milk in breakfast, no sour food, no sharp spices, no deep fried or fermented food, no viruddhahara). Group B patients were treated as outdoor patients. Group A included 100 patients and group B included 50 patients. Six patients from group A and 11 from group B were dropped out due to various reasons. The administration of anti-diabetic drugs (if the patient was taking them) was not interfered with.

#### DURATION OF THE CLINICAL TRIAL

The duration of the treatment was for 3 months.

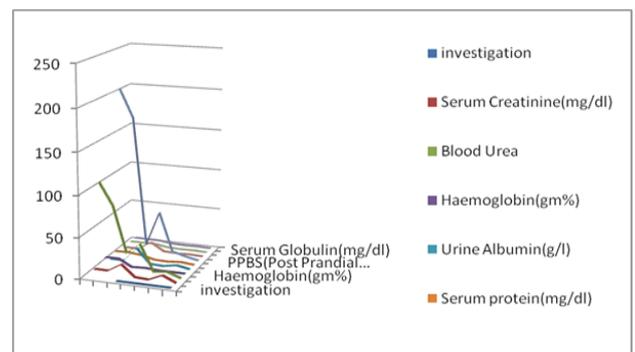
#### Observation and Results

Table 1- shows that in group A, serum creatinine reduced by 14.79%. This beneficial effect was statistically highly significant. Blood urea reduced by 23.41% and it is also statistically highly significant. This is encouraging and shows improvement in kidney functions. Urine albumin also significantly reduced by 18.88%. Serum total protein and serum albumin increased slightly around 4%, whereas serum globulin decreased by 2.71% which is expected. Though the effects on serum proteins are statistically insignificant, the results are promising

**Table 1: Effect on laboratory investigations in group A**

investigation	Mean	percentage	SD	SE	t	P	
Serum Creatinine(mg/dl)	5.25	5.00	14.80	.99	.12	7.4	<0.001
Blood Urea	106	79.2	23.40	36.00	4.13	6.00	<0.001
Haemoglobin(gm%)	9.01	9.11	0.45	1.23	0.14	0.28	>0.05
Urine Albumin(g/l)	1.51	1.31	18.9	0.85	0.10	3.03	<0.001
Serum protein(mg/dl)	6.00	6.30	4.53	0.65	0.18	1.60	<0.05
PPBS(Post Prandial Blood Sugar)(mg/dl)	204	170	13.6	55.66	7.96	3.46	<0.001
Urine Sugar(g/l)	0.66	0.57	10.76	0.94	0.11	0.66	>0.05
Serum Albumin(mg/dl)	3.16	3.27	3.31	0.68	0.19	0.57	>0.05
Serum Globulin(mg/dl)	3.04	2.96	2.72	0.59	0.17	0.48	>0.05

BT=Before Treatment, AT=After Treatment



**Table 2: shows that all the signs and symptoms improved significantly in group A patients**

Symptoms	Reported no of patients	Mean BT	Mean AT	Percentage	SD	SE	t	P
Urine output(l)	134	1.00	1.68	21.54	0.53	0.06	6.51	<0.001
Edema	74	1.97	0.61	69.01	0.89	0.10	12.76	<0.001
Nausea	26	2.00	0.19	90.39	1.02	0.20	9.04	>0.001
Vomiting	20	1.75	0.25	85.71	1.14	0.26	5.84	<0.001
Weakness	80	1.78	0.59	66.90	0.55	0.06	19.2	<0.001
Fatigue	20	1.30	0.25	80.77	0.60	0.14	7.76	<0.001
Loss of appetite	70	1.60	0.32	76.07	0.61	0.07	17.39	<0.001
Breathlessness	27	1.56	0.59	61.90	0.65	0.13	7.71	<0.001
Muscles cramps	11	1.45	0.18	87.5	0.79	0.24	5.37	<0.001
Hiccup	4	0.24	0.0	100	-	-	-	-
Pruritis	5	1.4	0.6	57.14	-	-	-	-
Drowsiness	2	1.5	0.0	100.0	-	-	-	-

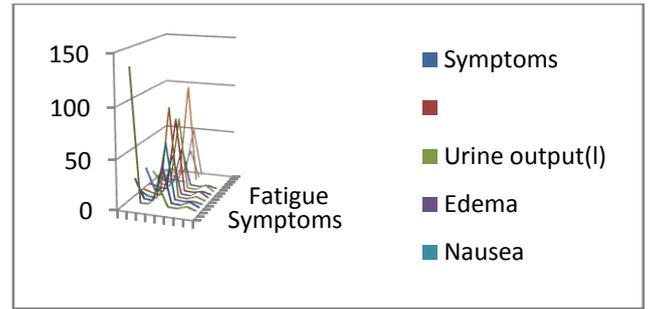
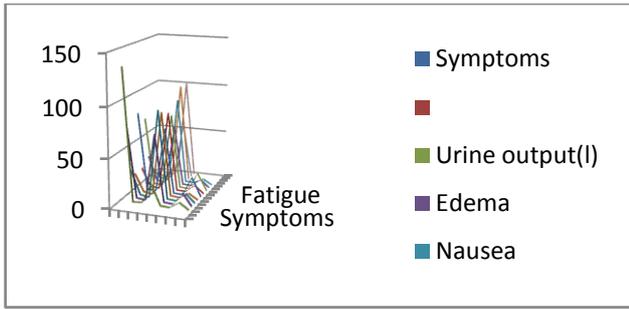


Table 3 shows that in Group B patients, the results were not encouraging. In group B of patients serum creatinine raised by 22.6% and blood urea increased by 3.9%. Urine albumin raised by 25.61%, whereas total serum protein decreased by 7.16%, serum albumin decreased by 9.52% and serum globulin decreased by 8.33%. All the results in this group were statistically insignificant except the rise in serum creatinine.

investigation	Mean	percentage	SD	SE	t	P	
Serum Creatinine(mg/dl)	5.65	7.30	22.60	1.5	0.3	5.39	<0.001
Blood Urea	108.66	113.8	3.9	34.48	7.52	0.59	>0.05
Haemoglobin (gm%)	9.6	8.5	11.53	1.6	0.34	3.24	<0.05
Urine Albumin(g/l)	1.53	2.05	25.61	1.00	0.23	2.33	>0.05
Serum protein(mg/dl)	7.16	6.63	7.67	-	-	-	-
PPBS(Post Prandial Blood Sugar)(mg/dl)	197.33	174.6	10.92	43.79	11.3	1.90	>0.05
Urine Sugar(g/l)	0.74	0.64	12.00	0.96	0.23	0.38	>0.05
Serum Albumin(mg/dl)	3.68	3.33	9.52	-	-	-	-
Serum Globulin(mg/dl)	3.60	3.30	8.33	-	-	-	-

BT=Before Treatment, AT=After Treatment

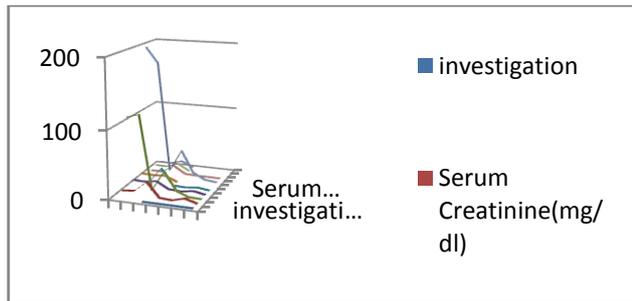


Table 4-shows that in Group B also, signs and symptoms like urine output, edema, weakness and loss of appetite significantly improved, but percentage of improvement was less in comparison to group A patients.

Table4: Effect on signs and symptoms in Group B.

Symptoms	Reported no of patients	Mean of BT	Mean of AT	Percentage	SD	SE	t	P
Urine output(l)	134	1.00	1.38	19.73	0.41	0.08	3.25	<0.01
Edema	22	2.05	1.25	38.00	0.82	0.17	4.47	<0.001
Nausea	7	1.70	0.70	58.33	1.41	0.54	1.88	>0.1
Vomiting	5	2.21	0.21	91.0	0.83	0.18	3.58	<0.01
Weakness	24	1.76	1.09	39.90	0.56	0.13	5.78	<0.001
Fatigue	4	2.00	0.50	75.00	0.90	0.34	2.53	<0.01
Loss of appetite	15	1.73	0.47	73.07	0.79	0.2	6.14	<0.001
Breathlessness	7	2.14	1.29	40.00	0.90	0.34	2.52	<0.01
Muscles cramps	3	1	1	0	-	-	-	-
Hiccup	1	2	0	100	-	-	-	-
Pruritis	3	2.33	1.67	28.67	-	-	-	-
Drowsiness	4	1.5	0.75	50.00	-	-	-	-

DISCUSSION

Gokshuradi Guggulu (containing mainly Gokshura, Guggulu, Triphala, Trikatu, Musta a combined Ayurvedic preparation; Bhumyamalaki Punarnavastak Kwath, Vasa, Shilajatvadi Vati (modified) (containing mainly Shilajatu, Guggulu and Guduchi) is a well-known and commonly used medicine in diseases of Mutravaha Srotas. Punrnavastak Kwath has rejuvenation and immunomodulation properties on nephrons of kidney. It is specially indicated in Prameha, Mutrakriccha and Mutraghata along with other indications of Mutra and Shukravaha Srotasa. [8] Gokshura, the main ingredient, is well known for its Rasayana effect, especially on Mutravaha Srotas. Guggulu (Commiphora mukul), another main ingredient, is a Rasayana[9-11] and it has Lekhana[12-13] (scraping) effect also. In addition, Guggulu has Tridosahara[14-15] property also, by which it pacifies all the three doshas. Bhumyamalaki (Phyllanthus niruri) is a Rasayana[16] and has been described as Mutraroga Nashini as well as Pittameha Nashini[17] in Rajnighantu. Vasa (Adhatoda vasica) is described as Mehahara[18-19] and Rasayana[20-21] in classics. Practically, it is found effective in preventing albuminuria. Shilajatvadi Vati[22] is indicated for Prameha. Since it is a combination of Shilajatu, Guggulu and Guduchi, it also works on Mutravaha Srotas. In the diabetic patients, nephropathy develops mainly due to glomerular sclerosis and arteriosclerosis in kidneys. Kidney tissues get damaged after some period. According to Ayurveda, nephropathy is a disease of Mutravaha Srotas. Though all the three doshas are involved in the disease, Kapha is responsible in blocking microvessels and developing microangiopathy. Damage in tissue can be repaired and prevented by the use of Rasayanas as they improve the nourishment, maintain the patency of the Srotas and improve the resistance of the tissues against any adversity. Any blockage can be removed by the preparations having Lekhana (scraping) effect on blocked microvessels as well as macrovessels. Hence, these preparations have been selected for the treatment of diabetic nephropathy.

During the assessments, it was observed that the patients of group A. who were under strict supervision benefited well, whereas the patients of group B who were treated as outdoor patients and were not under strict supervision and did not follow instructions for diet and regimen. Hence get moderate relief.

Table 2: shows that all the signs and symptoms improved significantly in group A patients.

Symptoms	Reported no of patients	Mean of BT	Mean of AT	Percentage	SD	SE	t	P
Urine output(l)	11	1.00	1.68	21.54	0.53	0.06	6.51	<0.001
Edema	74	1.97	0.61	69.01	0.89	0.10	12.76	<0.001
Nausea	26	2.00	0.19	90.39	1.02	0.20	9.04	>0.001
Vomiting	20	1.75	0.25	85.71	1.14	0.26	5.84	<0.001
Weakness	80	1.78	0.59	66.90	0.55	0.06	19.2	<0.001
Fatigue	20	1.30	0.25	80.77	0.60	0.14	7.76	<0.001
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Muscles cramps	11	1.45	0.18	87.5	0.79	0.24	5.37	<0.001
Hiccup	4	0.24	0.0	100	-	-	-	-
Pruritis	5	1.4	0.6	57.14	-	-	-	-
Drowsiness	2	1.5	0.0	100.0	-	-	-	-

Table 3 shows that in Group B patients, the results were not encouraging. In this group of patients serum creatinine raised by 22.6% and blood urea increased by 3.9%. Urine albumin raised by 25.61%, whereas total serum protein decreased by 7.16%, serum albumin decreased by 9.52% and serum globulin decreased by 8.33%. All the results in this group were statistically insignificant except the rise in serum creatinine.

**Table3: Effect on laboratory investigations in group B.**

investigation	Mean	percentage	SD	SE	t	P
Serum Creatinine(mg/dl)	5.65	7.30	22.60	1.5	0.3	5.39 <0.001
Blood Urea	108.66	113.8	3.9	34.48	7.52	0.59 >0.05
Haemoglobin(gn%)	9.6	8.5	11.53	1.6	0.34	3.24 <0.05
Urine Albumin(g/l)	1.53	2.05	25.61	1.00	0.23	2.33 >0.05
Serum protein(mg/dl)	7.16	6.63	7.67	-	-	- -
PPBS(Post Prandial Blood Sugar)(mg/dl)	197.33	174.5	10.92	43.79	11.3	1.90 >0.05
Urine Sugar(g/l)	0.74	0.64	12.00	0.96	0.23	0.38 >0.05
Serum Albumin(mg/dl)	3.68	3.33	9.52	-	-	- -
Serum Globulin(mg/dl)	3.60	3.30	8.33	-	-	- -

**BT=Before Treatment, AT=After Treatment**

## CONCLUSION

Ayurvedic preparations used in the present study are much effective in improving the kidney functions and retarding the progression of diabetic nephropathy, especially with strict diet restriction and regimen. It may be concluded that treatment is effective if the patient is on healthy food which is supportive enough to act against disease process. This type of food may be creating a favorable atmosphere in the body for better activity of the medicaments being used. This treatment may bring some new hope to the patients of diabetic nephropathy which usually terminates to chronic renal failure and ultimately to death.

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