



## Clinical Research

## Effect of *Atibalamula* and *Bhumyamalaki* on thirty-three patients of diabetic neuropathy

Kalapi Patel<sup>1</sup>, Manish Patel<sup>2</sup>, S. N. Gupta<sup>3</sup>

<sup>1</sup>Reader and Head, Department of Panchakarma, <sup>2</sup>Lecturer, Department of Kayachikitsa, <sup>3</sup>Professor and Head, Department of Kayachikitsa, J.S. Ayurved college, Nadiad, Gujarat, India

### Abstract

Diabetic neuropathy is a relatively early and common complication affecting approximately 30% of diabetic patients. According to Ayurvedic principles there is involvement of *Vata* and *Pitta Dosa* in diabetic neuropathy. *Bhumyamalaki* (*Phyllanthus niruri*) is a plant which shows possibility to pacify these two *Dosas*. Another plant *Atibala* (*Abutilon indicum*) has also *Vata* pacifying qualities. Present study has been carried out to study the effects of *Bhumyamalaki* and *Atibala* on 33 patients of diabetic neuropathy. All the patients have been given *Bhumyamalaki Churna* 3 g twice a day and decoction of 10 g of *Atibala-mula* twice a day for 30 days. Neuropathy analyzer machine has been used for exact recording of sensory perception of vibration, cold and hot sensations before and after treatment. Changes in numbness, tingling, burning sensation and pain in lower limbs have also been assessed before and after treatment. Results have been analyzed statistically by applying the 't' test. It can be stated from the results that use of *Bhumyamalaki* and *Atibalamula* in the patients of diabetic neuropathy can revert the diminished sensory perception and can reduce the symptoms significantly.

**Key words:** *Abutilon indicum*, *Atibala*, *Bhumyamalaki*, *Diabetic neuropathy*, *Phyllanthus niruri*

### Introduction

Diabetic neuropathy is a relatively early and common complication affecting approximately 30% of diabetic patients.<sup>[1]</sup> Although the invention of insulin and hypoglycemics have done a great service for diabetics, yet these patients do not get a proper solution for their neuropathic complications. The drugs used conventionally are mostly for relief in the symptoms and moreover they have certain side effects. Therefore it is necessary to explore the possibilities of safer and effective treatments from other sources.

In Ayurvedic classics symptoms like *Suptata* (numbness) and *Daha* (burning sensation) in body parts especially in hands and feet are described as *Purvarupa* of *Prameha*.<sup>[2]</sup> *Daha* is also described among the *Upadravas* (complications) of *Prameha*.<sup>[3]</sup> These are very common features of diabetic neuropathy. According to Ayurvedic principles, there is involvement of *Vata* and *Pitta Dosa* in diabetic neuropathy. *Bhumyamalaki* (*Phyllanthus niruri*) is a plant which shows possibility to pacify these two *Dosas* as it is described to be a *Pitta* and *Kapha* reducing plant<sup>[4,5,6]</sup> and in addition it is used

in the treatment of *Vata*-related diseases.<sup>[7,8,9,10,11,12]</sup> Another plant *Atibala* (*Abutilon indicum*) is a good substitute of *Bala* (*Sida cordifolia*) which is well-known for its *Vata* reducing qualities. A preliminary study has been started to observe and evaluate the effect of *Bhumyamalaki* and *Atibala-mula* on diabetic neuropathy in PD Patel Ayurveda Hospital, Nadiad.

### Aims and objectives

- To study the effects of *Bhumyamalaki* and *Atibala* on diabetic neuropathy.
- To observe the safety of the treatment.

### Materials and Methods

#### Inclusion criteria for the patients

- The patients for this study have been selected randomly irrespective of their age, sex, religion, etc.
- Patients with clinical positive history of type 2 diabetes mellitus having the symptoms of diabetic neuropathy (peripheral) are selected for the present study.

#### Exclusion criteria for the patients

- Patients having any other associated clinical conditions have not been included in the present study.
- Patients having diabetic complications other than neuropathy were also excluded from the study.

**Address for correspondence:** Dr. Kalapi B. Patel,  
J.S. Ayurved College, College Road,  
Nadiad - 387001, Gujarat, India.  
E-mail: drkalapi@rediffmail.com

### Plan of the treatment

- The patients have been treated in OPD as well as in IPD depending on the severity and the circumstances.
- All the patients have been treated with *Bhumyamalaki Churna* 3 g twice a day and a decoction prepared from 10 g of *Atibala mula* twice a day.
- Duration of the study was 30 days.
- Total 33 patients have been taken for the study presently; however, the study is continued.

### Criteria for assessment

Neuropathy analyzer which is specifically designed electronic machine by Diabetic foot care India, Chennai, can record the perceptions of vibration, heat and cold sensations exactly with the help of computer has been used to record these sensations before and after the treatment in all the 33 patients.

The criteria used to evaluate vibration, heat and cold sensations by neuropathy analyzer are as below [Table 1]:

During the recording frequency of vibrating probe (which is to be kept in contact with the skin of the sole) is to be increased and when patient feels the vibration it is recorded in the computer, temperature of the probe is to be reduced from 30°C to 0°C to record perception of cold sensation and temperature of the probe is to be increased from 30°C up to 50°C to record perception of heat sensations.

All the symptoms have also been assessed before and after treatment according to the given score Table 2.

### Results and Discussion

None of the patients have shown any new and unusual features during the course of treatment.

As we know that diabetic neuropathy is common complication amongst diabetics. In conventional medicine tricyclic antidepressants, anticonvulsants, opiates, membrane stabilizers and antioxidants are used in diabetic peripheral polyneuropathy for symptomatic relief.<sup>[13]</sup> All these drugs have their side effects. Hence there is need to find out safer and effective treatment from the sources other than conventional medicine.

According to Ayurvedic principles, the symptoms of diabetic neuropathy like paraesthesiae, pain and tingling sensation are indicating involvement of *Vata Dosa*. Whereas burning sensation is because of vitiation of *Pitta Dosa*. Hence drugs pacifying *Vata* and *Pitta Dosas* are useful in the treatment of diabetic neuropathy.

*Bhumyamalaki* is a plant having *Sitavirya*, *Pitta-Kaphahara* and *Dahahara* properties.<sup>[4,5,6]</sup>

It is also used in the treatment of *Vata*-related diseases.<sup>[7,8,9,10,11,12]</sup> It is also described as *Mutraroga Nasini*, *Pittameha Nasini* in the classics.<sup>[14]</sup> Another plant *Atibala* has *Sita*, *Madhura*, *Balakrita* properties<sup>[15,16]</sup> and also *Tridosahara*<sup>[17]</sup> properties. In addition it has *Rasayana*<sup>[18]</sup> effect which reduces all the three *Dosas*.<sup>[3]</sup> Hence these two plants have been selected for the present study.

The most common signs found in diabetic sensory polyneuropathy are diminished perception of vibration sensation and impairment

**Table 1: Criteria used by neuropathy analyzer machine to assess perception of sensations**

Sensations	Normal	Mild	Moderate	Severe
Inability to feel vibration	Up to 10 fr/sec below the age of 50 yrs	11-15 fr/sec below the age of 50 yrs	16-20 fr/sec below the age of 50 yrs	More than 20 fr/sec below the age of 50 yrs
Inability to feel cold	Up to 20°C	19-15°C	14-10°C	Less than 9°C
Inability to feel heat	Up to 42°C	43-45°C	46-48°C	More than 49°C

**Table 2: Scoring of symptoms**

Symptoms	Score
<b>Numbness</b>	
No numbness	00
Numbness only in feet	01
Numbness on whole lower limbs	02
Numbness on other parts of the body also	03
<b>Tingling sensation</b>	
No tingling sensation	00
Tingling sensation only on feet	01
Tingling sensation on whole lower limbs	02
Tingling sensation on other parts of the body together with lower limbs	03
<b>Burning sensation</b>	
No burning sensation	00
Burning sensation only in foot soles	01
Burning sensation in whole lower limbs	02
Burning sensation in all over the body	03
<b>Pain</b>	
No pain	00
Only in feet	01
Pain in legs	02
Pain in legs with difficulty in walking	03

of all other modalities of sensations.<sup>[11]</sup> Perception of vibration, heat and cold sensations are recorded with the help of neuropathy analyzer before and after treatment in all the 33 patients of diabetic neuropathy. Analysis of the results has shown highly significant to significant improvement in perception of these sensations.

Tables 3 and 4 show that perception of vibration sensations has been improved by 31% in right foot and 32% in left foot and it came in lower range of moderate affection from severe. Perception of cold sensation has been improved by 19.7% in right foot and 23% in left foot, which has come in to the normal range after treatment. Improvement in vibration and cold sensations are highly significant in both the feet. Perception of heat sensation is improved by 6.85% in right foot and it is

**Table 3: Change in perception of sensations in right leg**

Sensations	Mean		%	S.D.	S.E.	t	P
	B.T.	A.T					
Vibration fr/sec	22	15	31.16	8.74	1.5	4.55	<0.001
Cold (°C)	17.8	22.2	19.73	5.14	0.89	4.89	<0.001
Hot (°C)	47.7	44.4	6.85	3.99	0.69	4.69	<0.001

**Table 4: Change in perception of sensations in left leg**

Sensations	Mean		%	S.D.	S.E.	t	P
	B.T.	A.T					
Vibration fr/sec.	24	16	32.61	8.76	1.52	5.09	<0.001
Cold (°C)	17.8	23.1	23.12	6.48	1.13	4.74	<0.001
Hot (°C)	47.4	44.9	5.11	3.9	0.68	3.57	<0.01

**Table 5: Improvement in symptoms**

Symptoms	Reported in no. of patients	Mean		%	S.D.	S.E.	t	P
		B.T.	A.T.					
Numbness	27	2.11	0.63	70.18	0.7	0.13	10.99	<0.001
Tingling	14	1.79	0.5	72	0.47	0.13	10.26	<0.001
Burning sensation	16	1.93	0.33	77.59	0.82	0.2	7.35	<0.001
Pain in lower limbs	13	1.92	0.69	64	0.6	0.17	7.41	<0.001

highly significant whereas 3.9% improvement in left foot and it is significant. It has come in to mild from upper range of moderate affection.

In addition Table 5 shows highly significant improvement in symptoms also. Numbness is relieved by 70%, tingling is relieved by 72%, burning sensation is reduced by 77.5% whereas pain in lower limbs is relieved by 64%.

## Conclusion

It can be stated from the results that Ayurvedic drugs used in present study are effective to revert the diminished perception of sensations like vibration, cold and heat. There is highly significant reduction in other symptoms including numbness, tingling, burning sensation and pain in lower limbs in the patients of diabetic neuropathy. Both of these drugs are also safe as did not produce any adverse features.

The study is continuous to get large number of patients.

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## हिन्दी सारांश

# अतिबला मूल और भूम्यामलकी का डायामीटिक न्यूरोपथी के ३३ रोगियों पर प्रभाव

कलापी पटेल, मनीष पटेल, एस. एन. गुप्ता

डायामीटिक न्यूरोपथी अपेक्षाकृत जल्दी होने वाला एवं सामान्य उपद्रव है जो प्रायः ३०% मधुमेह के रोगियों को असर करता है। आयुर्वेदिय सिद्धांतों के अनुसार डायामीटिक न्यूरोपथी में विशेष रूप से वात और पित्तदोष की अधिकता होती है। भूम्यामलकी इन दोनों का शमन करने की क्षमता रखती है। अतिबला में भी वातशामक गुण है। प्रस्तुत अध्ययन डायामीटिक न्यूरोपथी के ३३ रोगियों में इन दोनों औषधियों का प्रभाव देखने के लिए किया गया है। सभी रोगियों को भूम्यामलकी चूर्ण ३ ग्राम दिन में दो बार और अतिबलामूल १० ग्राम का काढा दिन में दो बार ३० दिन तक दिया गया। चिकित्सा पूर्व एवं पश्चात कम्पन, शीत एवं उष्ण संज्ञाज्ञान का निश्चित मापन करने के लिए न्यूरोपथी एनालाईजर मशीन का उपयोग किया गया है। शून्यता, चिमचिमायन, दाह और अधोशाखाओं में वेदना के लक्षणों में हुए सुधार का भी चिकित्सा पूर्व एवं पश्चात अध्ययन किया गया है। प्राप्त निरीक्षणों का विश्लेषण सांख्यिकी के उपयोग से 'टी' टेस्ट के आधार पर किया गया है। परिणाम के आधार पर यह निष्कर्ष किया जा सकता है कि उपरोक्त औषधियाँ डायामीटिक न्यूरोपथी के रोगियों में क्षति ग्रस्त संज्ञा को पूर्ववत् प्राकृत अवस्था में वापस लाने में और लक्षणोपशमन करने में समर्थ हो सकती हैं।