

# STUDIES ON THE ROLE OF PHYSOSTIGMA VENENOSUM IN THE IMPROVEMENT OF SIMPLE MYOPIA\*

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**ABSTRACT:** The simple myopia of 65 patients was determined following the examination of defective vision, retinoscopy study, ophthalmoscopic examination of the fundus and slit-lamp examination of fundus stereoscopically under high magnification. All the patients were divided into two groups such as control group (placebo) consisting of 20 patients and diseased group (Physostigma) consisting of 45 patients. These patients were divided into different age groups with more or less equal body weight, different states of general health, different occupations and were coming from different economic status of the society excluding all pathological ocular findings. Physostigma venenosum in different homoeopathic potencies was given orally for different length of periods and the condition of the simple myopia was reinvestigated at the interval of 45 days and continued up to 6 months. The treatment of simple myopia with homoeopathic drugs is a very interesting and fascinating chapter in the field of homoeopathic therapeutics. The results at the end of six months showed a significant improvement in case of simple myopia and the gradual fall of vision was improved remarkably. The present paper is mainly concerned regarding the probable role of physostigma venenosum in the improvement of simple myopia and a more significant and valuable result was observed.

## INTRODUCTION

Physostigma venenosum, a typical climbing plant is found near the bank of Niger river of the sea, Guinea of South Africa. It belongs to the family Legumiosae and its common name is Calabar bean. The alcoholic tincture is prepared from the finely pulverized bean and the triturations are made of the whole bean. It is a very common and widely used homoeopathic medicine for a number of diseases like different types of myopia, chronic glaucoma, nystagmus, partial blindness, etc. Physostigma is the active principle of Physostigma. Physostigmine salicylate is an alkaloid of Physostigma which are colourless or faintly yellow crystals, gradually acquiring a red tint on exposure to light and air. A paste of the bean was once used by native tribes of West Africa as an 'ordeal poison' in trials of accused persons. So far as information is available, the effects of Physostigma venenosum on the eyes are lacking except for a few clinical data. The present study includes the role of Physostigma venenosum in simple myopia and was investigated by adopting different types of reliable and universally accepted ophthalmological methods and simultaneously possible modes of action of the drug have been discussed.

## MYOPIA

Myopia or short-sightedness, is the refractive state of the eye in which,

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with normal tonic accommodation, the parallel rays of light come to a focus on a point in front of the retinal plane. This implies that either the axial length of the eyeball is abnormally increased or the total refractive power is more than the normal. Myopia is caused due to heredity, prenatal weakness, shape of the orbit, overaction of the ciliary muscles, stretching of the choroid, deficiency in the action of the extra-ocular muscles, increase of intraocular pressure, pull of gravity on the optic nerve, lack of calcium, lack of vitamins, too much close work, too much light, advance of civilization and even flat feet. A simple myopia is that when the progress and development of myopic changes are very slight, the pathological changes of the fundus is practically absent and the age groups of the individual are prolonged, i.e. from 5 years to 35 years.

#### MATERIALS AND METHODS

In the present study, 90 normal eyes of 45 patients of different age groups ranging from 0 year to 35 years of both male and female with defective vision (corrected or uncorrected) were considered for determination of improvement of simple myopia. The cases were of different states of general health, different occupations and were coming from different economic status of the society. Routine examinations of blood and stool were done and which were normal. The myopic patients were free from any remarkable acute or chronic sufferings. All the patients were divided into two main groups, viz. Group 1 or Placebo group and Group 2 or Physostigma group. 40 normal eyes with 20 cases of different age groups of either sex with defective vision were taken as control study for placebo group. The total number of cases, sex and eyes distribution are shown in Table I and II.

Different ophthalmological methods used in the experiments were:

(a) *Retinoscopy examination*: The principle of retinoscopy is to convert the observed eye into a degree of myopia that the image formed by the fundus in front of the observed eye coincides with the pupillary plane of the observer. Atropine sulphate 1% ointment up to the age of 10 years and Homatropine 2% solution after 10 years of age was used for full cycloplegic. Then the retinoscopy was done. If the image moves in the direction opposite to the movement of the mirror, the refractive state of the eye is myopia.

TABLE I  
DISTRIBUTION OF SIMPLE MYOPIA WITH SEX-WISE ANALYSIS

	No. of cases	Percentage
Male	25	55.5%
Female	20	44.4%
Total	45	

TABLE II

DISTRIBUTION OF SEX AND NUMBER OF EYES IN PLACEBO AND PHYSOSTIGMA GROUPS

	No. of cases		No. of eyes	
	Males	Females	Right	Left
Group—1 (Placebo)	12	8	20	20
Group—2 (Physostigma)	25	20	45	45
Total	37	28	65	65

(b) *Ophthalmoscopic examination*: By this method, the media and the posterior segment of the eye were examined. The pupil should be under the effect of a mydriatic cycloplegic. The general findings that we observed were generalised thinning and atrophy of the retina and choroid, myopic crescent of the disc, posterior staphyloma, large disc, pale areas in the macular region, rarely Foster-Fuchs' fleck at the macula, floating opacities in the liquefied vitreous, hyaloid holes, posterior detachment and post-cortical cataract, might or might not be present.

(c) *Slit-lamp examination*: By this method, posterior part of the vitreous, retina and optic disc, hole and a small cyst in the macular region and retinal oedema can be detected.

*Administration of Drug*: Physostigma venenosum of different potencies were procured from Hahnemann Publishing Co. Private Ltd., Calcutta. The vision of Placebo and Physostigma groups was examined and noted before treatment. The entire experimental period was counted for 180 days. The period and potencies of placebo (alcohol) and Physostigma by oral administration were as follows: First 3 days (30 potency, one drop orally, once daily); from 40th to 42nd days (200 potency, one drop orally, once daily); from 85th to 87th days (1000 potency, one drop orally once daily) and from 130th to 132nd days (10,000 potency, one drop orally, once daily) and the days not mentioned were without any treatment. The drug and the placebo were identical in colour and appearance. Placebo (alcohol) was also administered in the same dosage at the same time interval. The findings are presented in the following tables and results are studied and analysed.

#### RESULTS

The improvement of defective vision in simple myopia following administration of Physostigma venenosum is shown in the Tables V, VI and VII. It was also observed from the tables that out of 45 cases, a maximum number of patients (67.7%) had significant improvement, 27.7% slight im-

provement and 5.4% cases practically no improvement. The gradual progress of defective vision of all the patients of different age groups was accompanied by simultaneous changes of the fundus, lens and important ocular structures by retinoscopy study, ophthalmoscopic study and slit-lamp findings. A control study was done by placebo in 20 cases which was shown in Tables III, IV and VII and it was observed that the gradual loss of vision found in 77.5% cases and there was no improvement in 22.5% cases. From Tables V and VI, it was observed that the most significant improvement was seen in 35 cases of 8-28 years, a moderate improvement of vision was found in 7 cases of 29-35 years and a poor grade of improvement was identified in 3 cases of 0-7 years.

## DISCUSSION

Myopia or short-sightedness is one of the most common refractive errors of the eye. It generally occurs due to heredity, shape of the orbit, overaction of the ciliary muscles, lack of calcium and vitamins, too much close work and advance of civilization. It generally develops just before, or after puberty (i.e. between 5 and 15 years of age) stage of an individual because of fairly quick growth of eye ball. Dr. Allen and Norton observed that simple myopia

TABLE III  
GRADUAL LOSS OF VISION IN SIMPLE MYOPIA AFTER TREATMENT WITH PLACEBO  
AT THE INTERVAL OF 45 DAYS

Group I: Right Eye (20)

Age (Years)	Vision	No. of Patients	Before Treatment		After Treatment					
			45th day		90th day		135th day		180th day	
			Vis	No.	Vis	No.	Vis	No.	Vis	No.
0-7	6/9	1	6/9	1	6/9	1	6/12	1	6/12	1
8-14	6/12	5	6/12	5	6/12	5	6/12	2	6/12	1
							6/18	3	6/18	4
15-21	6/12	7	6/12	7	6/12	5	6/12	4	6/12	2
					6/18	2	6/18	3	6/18	5
22-28	6/18	4	6/18	4	6/18	3	6/18	2	6/18	1
					6/24	1	6/24	2	6/24	3
29-35	6/24	3	6/24	3	6/24	3	6/24	2	6/24	1
							6/36	1	6/36	2

Note: Vision has gradually fallen in most of the cases (15); in rest of the cases (5) practically no change.

TABLE IV  
GRADUAL LOSS OF VISION IN SIMPLE MYOPIA AFTER TREATMENT WITH PLACEBO  
AT THE INTERVAL OF 45 DAYS

Group 1: Left Eye (20)

Age (Years)	Vision	No. of Patients	Before Treatment		After Treatment					
			45th day		90th day		135th day		180th day	
			Vis.	No.	Vis.	No.	Vis.	No.	Vis.	No.
0-7	6/9	1	6/9	1	6/9	1	6/12	1	6/12	1
8-14	6/12	5	6/12	5	6/12	5	6/12	2	6/12	1
							6/18	3	6/18	4
15-21	6/12	7	6/12	7	6/12	5	6/12	3	6/12	1
							6/18	2	6/18	4
22-28	6/18	4	6/18	4	6/18	3	6/18	2	6/18	1
							6/24	1	6/24	2
29-35	6/24	3	6/24	3	6/24	3	6/24	2	6/24	1
							6/36	1	6/36	2

Note: Gradual loss of vision in most of the cases (16) and in a few cases (4) no change.

TABLE V  
IMPROVEMENT OF VISION IN SIMPLE MYOPIA AFTER TREATMENT WITH PHYSOSTIGMA VENENOSUM  
AT THE INTERVAL OF 45 DAYS

Group 2: Right Eye (45)

Age (years)	Vision	No. of Patients	Before treatment		After treatment					
			45th day		90th day		135th day		180th day	
			Vis.	No.	Vis.	No.	Vis.	No.	Vis.	No.
0-7	6/9	3	6/9	3	6/9	3	6/9	1	6/9	1
							6/6	2	6/6	2
8-14	6/12	9	6/12	7	6/12	5	6/12	2	6/9	2
			6/9	2	6/9	4	6/9	7	6/6	7
15-21	6/18	14	6/18	9	6/18	2	6/12	8	6/9	3
			6/12	5	6/12	12	6/9	6	6/6	6
22-28	6/18	12	6/18	8	6/18	3	6/18	1	6/9	6
			6/12	4	6/12	9	6/9	7	6/6	6
29-35	6/24	7	6/24	4	6/24	3	6/24	2	6/24	1
			6/18	3	6/18	4	6/18	2	6/18	1
							6/9	3	6/9	5

Note: Improvement of vision in most of the cases (31), slight improvement in 12 cases of visual acuity and in the rest (2) no improvement.

TABLE VI

IMPROVEMENT OF VISION IN SIMPLE MYOPIA AFTER TREATMENT WITH PHYSOSTIGMA VENENOSUM AT THE INTERVAL OF 45 DAYS

*Group 2: Left Eye (45)*

Age (years)	Vision	No. of Patients	Before treatment		After treatment					
			45th day		90th day		135th day		180th day	
			Vis.	No.	Vis.	No.	Vis.	No.	Vis.	No.
0-7	6/9	3	6/9	3	6/9	3	6/9	1	6/9	1
					6/6	2	6/6	2		
8-14	6/12	9	6/12	7	6/12	5	6/12	2	6/9	2
			6/9	2	6/9	4	5/9	7	6/6	7
15-21	6/18	14	6/18	9	6/18	2	6/12	8	6/9	3
			6/12	5	6/12	12	6/9	6	6/6	11
22-28	6/18	12	6/18	8	6/18	3	6/18	1	6/9	6
			6/12	4	6/12	9	6/9	7	6/6	6
29-35	6/24	7	6/24	4	6/24	2	6/24	1	6/18	1
			6/18	3	6/18	5	6/18	3	6/9	6
						6/9	3			

*Note:* Much improvement of vision in most of the cases (30), slight improvement in 13 cases of visual acuity and in the rest (3) no improvement.

TABLE VII

COMPARATIVE EVALUATION OF RESULTS IN BOTH THE GROUPS

Degree of improvement	Group 1 (Placebo)		Group 2 (Physostigma)	
	Rt. eye (20)	Lt. eye (20)	Rt. eye (45)	Lt. eye (45)
Much improvement	--	--	31 (68.8%)	30 (66.6%)
Slight improvement	--	--	12 (26.6%)	13 (28.8%)
No improvement	5 (25%)	4 (20%)	2 (4.4%)	3 (6.4%)
Gradual loss of vision	15 (75%)	16 (80%)	--	--

is quickly produced due to twitching of the lids around the eyes, frontal headache and spasm of the ciliary muscles. Scherbatdva and Kodzov in 1972 observed that the anatomical changes in the fundus of the retina is dependent upon the size of the globe in myopia. Avelisov in 1972 observed that simple myopia was corrected by exercising the ciliary muscles with alternative plus

and minus correction. Chapman in 1973 observed that myopia in a child may be reduced by getting the child to read and do close work with his head held erect and not looking down. Levchenko and Drunkman in 1978 observed that Nihexin was used in the treatment of myopia and a favourable effect was found on ocular haemodynamics. Von Graefe and Robertson have observed that after administration of Physostigma venenosum, the ciliary muscles of the iris are contracted, so that accommodation is impaired and myopia is induced. Dr. Woodyatt of Chicago found that simple myopia resulting from ciliary spasm was cured after administration of Physostigma venenosum. Dr. Knapp of New York proclaimed that Physostigma is used in chronic glaucoma and produces good results.

The simple type of myopia was produced from spasm of the ciliary muscles with symptoms of irritability, dull pain after using the eyes, muscae volitantes, flashes of light, twitching of lids and around eyes, etc. and Physostigma venenosum is one of the important drugs which can give good result. From this point of view, the improvement of vision in simple myopic patients as shown in Tables V, VI and VII after treatment with different potencies of Physostigma venenosum is an interesting finding. The improvement of vision after administration of Physostigma was observed that an excellent improvement was found in 35 cases of 8-28 years of age, a moderate improvement was seen in 7 cases of 29-35 years of age and a poor grade of improvement was identified in 3 cases of 0-7 years of age. On the basis of above observations it may be inferred that simple myopia in the present study may be related to evidences of depressed sympathetic energy rather than stimulate one of the nerves of the cranio-spinal axis. But, the direct effect of Physostigma venenosum either on the ciliary muscles or on the parasympathetic nerve in the improvement of simple myopia cannot be excluded entirely at present. Further detailed work and more scientific investigations are in progress to overcome the present problem in the improvement of simple myopia.

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**Editorial comment:** The observations made by the author are very interesting. But the only snag is the absence of an individualising examination of each case of myopia so that the law of similars, which is the essence of Homoeopathy, could be demonstrated between the drug and the patient. Unfortunately, the specificity of the drug action for the disease became the central point of research planning overlooking the principles of homoeopathic practice.

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### BELLADONNA IN BRAIN FEVER OR ENCEPHALITIS

*(Continued from page 260)*

of the attack, pronounced incurable at the general hospital. Not a single case proved fatal in our experience though newspaper reports claimed a toll of 56 in four districts in the hands of other systems of medicine.

**Editorial comment:** The report is very encouraging and in the interest of the profession at large, the authors of the paper are requested to send for publication the facts and figures in greater details.

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