

Efficacy of Aqueous Extract of *Helicteres isora* on Glucose Level in Type-2 Diabetic Patients Practicing Yoga – A Cohort Study

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Abstract

Background: Diabetes mellitus patients thrive very hard to reduce their glucose levels by using various hypoglycemic agents. Many hypoglycemic agents cause side effects and fail to reduce glucose level, when they use for a long time. Folklore natural medicines will successfully act on many diseases without causing any side effects when it was consumed prolonged. Patients practicing yoga and exercise with the traditional medicines contribute a significant efficacy in management of diabetes in very short period.

Main Observations: We report the cases of 40 to 60 year old type-2 diabetic patients were evaluated for the efficacy of *Helicteres isora* concoction 5 mg/5 ml concentration with practicing yoga and exercise. The patients were observed for the glucose levels and body weight before evaluating with cohort study. The results from the cohort study showed that the group 1M and 1O had significant reduction in glucose levels when compared to control groups treated for four weeks.

Conclusions: Type-2 Diabetic Patients administered orally with *H.isora* concoction in practicing yoga reveals that they were significantly reduced in blood glucose levels and body weight. Thus the study provides a novel hypoglycemic agent which is very cheaper that ails to the management of diabetes mellitus.

Keywords: *Helicteres isora*; Concoction; Diabetes mellitus; Dynamic meditation; Maharasanam; Blood Sugar

Introduction

Diabetes mellitus is a metabolic disorder caused due to the deficiency of insulin. This hormone controls the body processes and the metabolites such as glucose, protein, and fats. When the insulin synthesis is not sufficient, it cannot metabolize the carbohydrates and the other intermediately metabolites (fats and protein). This leads to accumulation high glucose in blood and urine. It is characterized as hyperglycemia and poly urea. In chronic the elevated levels of sugar can cause diabetic coma and ends in death [1]. Allopathic medicines were high in the cost, posse's side effects and the relief was not sustained permanently. The management and control of diabetes has continued to be challenging on type 2 diabetes mellitus.

Yogic exercises cause the muscles to absorb the glucose in the blood, thus the blood sugar level was reduced in diabetic patients [2]. Yogic exercises trigger the pancreas and liver to function very effectively, leads to regulate the blood sugar level in homeostasis by induction of insulin secretions [3]. Hence the muscular movements play important role in bringing down the blood sugar levels. Meditations and asana significantly lead the healthy functioning of the internal organs of the body. Combined therapy such as naturopathy healing with herbal and natural product [4] treating for various diseases paved a significant recovery and improvement in the management of diabetes mellitus. The present case report emphasizes the efficacy of *H. isora* fruit concoction in type-2 diabetic patients practicing yoga and exercise.

Case Report

Type-2 Diabetic patients aged ranges from 40-60 years old volunteers were chosen for this case study. The diabetic patients were practicing yoga and exercise in the Osho meditation center and Simplified kundalini yoga center. The case study was experimentally grouped into four groups. The patients practicing Osho meditation and exercise were administered orally with *H.isora* concoction 5 mg/5 ml

as group -IO and patients practicing simplified kundalini yoga daily/hour with *H.isora* 5 mg/5 ml as group-IM. Patients with practicing Simplified kundalini yoga exercise were grouped as Group IM without administered extract and considered as control. The patients practicing Osho meditation and exercise without treated concoction were considered as control and named Group IO. The study was conducted for 4 weeks. The patients were first demonstrated with exercise and counseling was given about the herbal *H.isora* concoction (Figure 1A and 1B). The Group IM and IO were practicing exercise such as maharasanam kayakalpa were shown in the Figure 1C-1F. Similarly the patients practicing osho meditation and exercise were demonstrated in the Figure 2B-2D. The group 1M and IO were given orally with *H.isora* concoction were displayed in the Figure 2A and 2B. The patients were observed for the weight and glucose levels before the study started (Table 1). Then the *H.isora* concoction was given at empty stomach, periodically the samples were taken at 1-4 weeks. The glucose level and weight were analyzed to screen the efficacy of *H.isora* concoction.

The group I-M and group IO-M (Figure 3A and 3B) diabetic

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Figure 1: Group-IM and IIM Volunteers participating counseling and practicing yoga of SKY with H.isora concoction.

- A: yoga master teaching about postures of yoga for participants.
- B: participants involved in yoga practicing classes at centre.
- C and D: Maharasanam postures of participants at yoga centre.
- E and F: Kayakalpa yoga postures of participants at yoga centre.



Figure 2: Group-IO and IIO Volunteers participating counseling and practicing yoga of Osho with H.isora concoction.

- A: Freshly prepared Helicteres isora fruit juice.
- B: Fruit juice given to the diabetic patients after yoga.
- C and D: Dynamic yoga postures by participants at yoga centre.

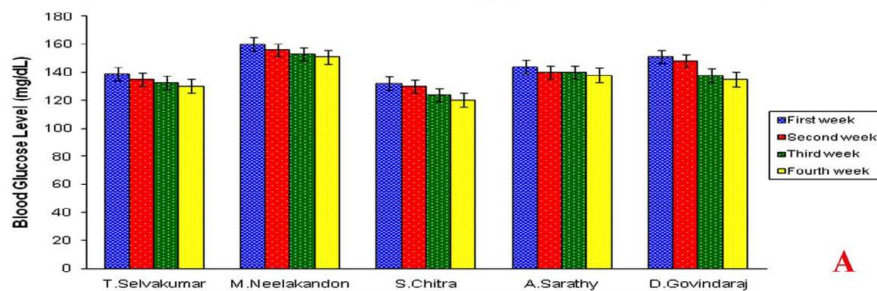
S.No	Patient Name	Age/Sex	Body Weight in kg				
			0 th Day	1 st week	2 nd week	3 rd week	4 th week
1	T. Selvakumar	48/M	70	70	70	69	69
2	M.Neelakandon	54/M	87	87	87	85	84
3	S. Chitra	51/F	68	68	68	67	67
4	A. Sarathy	43/M	79	79	79	78	78
5	D. Govindaraj	53/M	92	92	92	90	90

Table 1: Body weight of Diabetic Patients (Group I–M) practicing Kayakalpa and Maharasana.

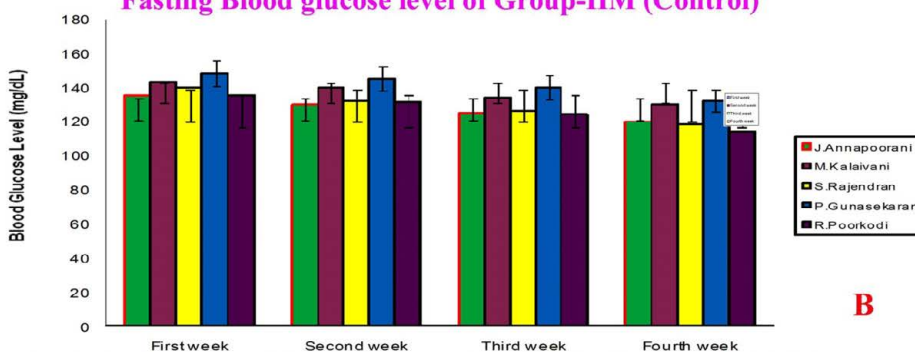
patients showed significant reduction in the body weight and blood glucose level. In group-IIM patients Yoga practices reduced 2-5 mg of glucose level and 1-2 kg of body weight (Table 2), whereas group-I M patients with yoga and herbal concoction showed sudden decrease of blood glucose level from 5 to 25 mg/dL in second and third week. This revealed that the *H.isora* concoction act as a potent hypoglycemic agent in diabetic patients.

Diabetic patients practicing Osho meditation and exercise were evaluated similar to the above groups 1M and IIM. The group I-O and

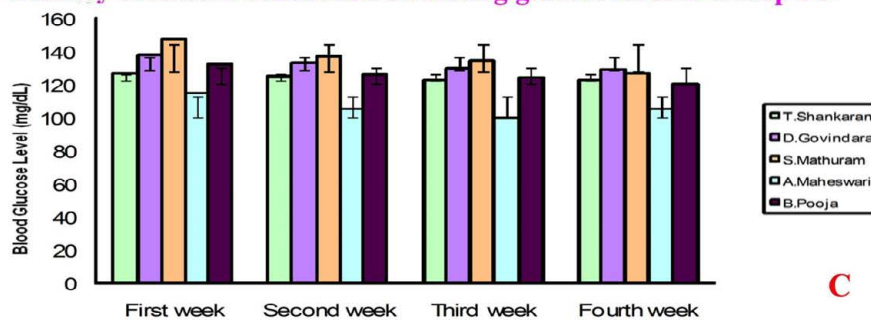
Efficacy of *H.isora* concoction on fasting glucose level in Group-IM



Fasting Blood glucose level of Group-IIM (Control)



Efficacy of *H.isora* concoction on fasting glucose level in Group-IO



Fasting Blood glucose level of Group-II O (Control)

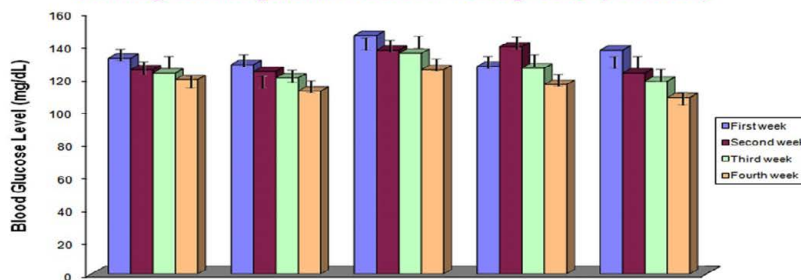


Figure 3: Efficacy of *H.isora* in Group-IM and Group-IO diabetic patients.

S.No	Patient Name	Age/Sex	Body Weight in kg				
			0 th Day	1 st week	2 nd week	3 rd week	4 th week
1	J.Annapoorani	52/F	78	77	76	76	75
2	M. Kalaivani	44/F	68	66	66	66	65
3	S. Rajendran	51/M	87	86	84	84	82
4	P.Gunasekaran	47/M	94	92	91	91	90
5	R. Porkodi	53/F	76	75	74	74	73

Table 2: Body weight of Diabetic Patients (GroupII–M) practicing Maharasana with *H.isora* concoction.

S.No	Patient Name	Age/Sex	Body Weight in kg				
			0 th Day	1 st week	2 nd week	3 rd week	4 th week
1	T. Shankaran	58/M	78	77	76	75	75
2	D. Govindaraj	47/M	85	83	81	81	81
3	S. Mathuram	52/M	87	86	83	82	82
4	A. Maheswari	49/F	72	70	68	68	68
5	B. Pooja	46/F	75	75	74	73	71

Table 3: Body weight of Diabetic Patients (Group I – O) practicing Osho Dynamic meditation only.

S.No	Patient Name	Age/Sex	Body Weight in kg				
			0 th Day	1 st week	2 nd week	3 rd week	4 th week
1	V.Manimekalai	48/F	78	77	75	74	74
2	S. Vasana	60/M	85	71	71	70	69
3	P. Gunasekaran	54/M	87	89	88	86	85
4	M. Murugesan	49/M	72	73	73	71	71
5	D. Devaki	56/F	75	77	75	74	73

Table 4: Body weight of Diabetic Patients (GroupII– O) practicing Osho Dynamic meditation only with *H.isora* concoction.

group II-O (Figure 3C and 3D) indicated that there was a significant factor that reduces the body weight and blood glucose level. In group II-O patients (Control) practices yoga alone reduced 2-10 mg glucose level and 2-5 kgs of body weight (Tables 3 and 4). At the same time the group II-O patients with Osho yoga and herbal concoction showed sudden decrease in blood glucose level in second and third week. The blood glucose level reduced to 5-25 mg/dL. This indicates that the incidence of random blood sugar (mg/dL) has improved in all the diabetic patients.

Discussion

Tea and other fruit beverages were play a vital role in the development of immunity and affords against diabetes, cardiovascular disease and cancer [5]. *H. isora* fruit extract was used in the treatment of diabetes mellitus and many experimentally induced by alloxan were reported for antidiabetic activity [6]. Further *H. isora* extract in mice revealed that it acts as dose and duration dependent activity. At lower dose (150 mg/kg) with lesser effect and higher impact on higher dose (250 mg/kg) were reported.

Yogasanas and exercises were beneficial in treatment of diabetes by various stages like twists, stretches and strains in the body. This raises the blood and oxygen supply to various organs and glands results in increased efficiency of the endocrine system [7-10] and improves the insulin management in the body. Therefore in this case study *H. isora* fruit concoction was evaluated for the antidiabetic activity in patients with practicing yoga and exercise. Our case report demonstrates that intake of *H.isora* herbal concoction and physical exercises can lower the diabetic blood glucose level to normal and also to maintain the

blood glucose level in balancing hyper and hypoglycemic state. Random control of fasting glucose with treated of standard drugs and glucose tolerance were analyzed in the young volunteers for cohort study in type-2 diabetes patients [11]. Similarly cohort study of *H.isora* concoction was given to diabetic patients practicing different yogic exercise and their efficacy was determined in Simplified kundalini yoga and Osho dynamic meditation.

In the present study, it is clearly indicated that exercises with osho dynamic meditations group-I O had demonstrates the significant reduction in the weight and blood glucose level in the patients than group-I M type-2 diabetic patients. This indicated that the *H. isora* oral concoction had decreased the blood glucose level significantly in type-2 diabetic patients.

Conclusion

This case report concludes that the efficacy of *H. isora* concoction effectively controls the blood glucose level in type-2 diabetic patients practicing yoga and exercise. Further the dynamic meditation and exercise with *H. isora* concoction acts synergistically in reduce the diabetic complications at very short interval. Therefore *H.isora* was strongly recommended as potential hypoglycemic agent for the management of type-2 diabetes mellitus.

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