

EFFECT OF CANNABIS ON DIABETIC PATIENTS IN RURAL POPULATION OF UDAIPUR REGION

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INTRODUCTION

The Cannabis is known by various names viz. Marihuana in USA, Machonha in Brazil, Daggs in South Africa, Bhang, Ganija and Charas in India. The material obtained from leaves is called 'Bhang' and from flowering tops and resins are called Ganja and Charas or Hashish respectively¹. THC (Tetra Hydro Cannabinol) component of Cannabis have various pharmacological action on central nervous system and cardiovascular system².

The active principals of cannabis are absorbed from the gastro-intestinal tract and the lungs. It has been reported that prolonged heavy use of cannabis could lead to tolerance and psychic dependence. Cannabis induced the depressant effects in rats³.

Bhang and Ganja are prescribed by Hakims and Vaidyas in bowel recommended as appetizers, nervous stimulant and antifatigue⁴. It is primarily stimulant, secondarily sedative and anti spasmodic and powder of the leaves applied to local inflammation, neuralgia, haemorrhoids⁵. In Indian legends, it appeared as a favourite drink of Lord Shiva who indulged in varieties of Bhang and Dhatura. It was an essential offering to deity.

Diabetes:

It has been described that diabetes mellitus is a state of relative and absolute lack of insulin in the body. Lack of insulin produces a series of disturbances affecting carbohydrate, protein, fat and electrolytes, metabolism⁶.

Insulin lack produces two basic defects in carbohydrates metabolism, which result in hyperglycemia and glycosuria; (1) Reduced entry of glucose in body cells, and (2) Increased glucose release from liver into the circulation. These changes cause an intracellular deficiency while the body faces an excess of extra cellular glucose. When the blood glucose rises above

the threshold (180 mg per 100 ml), it excreted by the kidney along with significant amount of water which causes hemoconcentration.

The uptake of glucose in body tissues is selective. In diabetes mellitus the uptake of glucose by brain, RBC and liver is normal while in other body tissues like heart smooth, skeletal muscles and adipose tissue, it is greatly reduced.

REVIEW OF LITERATURE

Obesity and diabetes mellitus are two of the most important metabolic disorders⁷. Non-insulin dependent diabetes mellitus (NIDDM) accounts for 75 percent of all cases of diabetes mellitus⁸.

In NIDDM, there is a combination of decrease insulin action and impaired insulin secretion⁹. The insulin resistance is both hepatic and peripheral with varying degree of beta cell compensation. Initially, plasma insulin levels are high but in established disease, beta cells become unable to respond to hyperglucemia leading relative hyperinsulinemia¹⁰.

The literature on the effect of cannabis blood glucose level revealed contradictory reports. It was noted the occasional tendency for the blood glucose to show slight elevation after the ingestion of cannabis¹¹, while others¹² reported that blood glucose level remained unaffected after the ingestion of cannabis and their findings are closely resembled with the observation of Wail et al (1968)¹³ and Miras (1965)¹⁴. Hughes et al (1970)¹⁵ reported worsening of diabetic control following use of Marijuana, but such adverse effect is still unknown.

There is considerable information in the literature about the effect of Marijuana on food intake. One of the most frequent comments have to do with an increased craving for sweets after ingestion of Marijuana. It was reported that delta-9-THC caused a decrease in both food intake and body weight in rats.¹⁶

Thus, scanty and divergent reports or rather no specific reports are available about the effect of cannabis, over human population in diabetic patients. Hence, it was thought worthwhile to investigate the effect of cannabis on blood sugar level in diabetic and non-diabetic subjects.

MATERIAL AND METHODS

The present study was conducted on 80 subjects aged between 35 and 65 years. They were randomly selected irrespective of their caste and creed. Detailed history was taken to exclude any major illness likely to affect blood sugar level. The subjects having history of drug intake, radiation and any infection, during study were excluded from the present study.

Only those subjects included in the present study who were taking 5 to 10 gm cannabis per day. Majority of subjects were Brahmin by caste, are belonged to lower middle class. After their small earning they spent their rest of time in worshipping lord Shiva and residing in temple area. They used to take cannabis 'Bhang' routinely in a group of 5 to 8 persons.

They presented themselves for the present study on the basis of personal request, relationship and their eagerness to know about the effect of 'Bhang'. The blood sugar was estimated by seems auto analyzer using enzymatic kit. The result are presented in table I.

Table I: Mean value of fasting blood sugar level (mg %) in normal and diabolic subjects without using cannabis and after using cannabis 5 to 10 gm per day for the last one year

S.No.	Values	Normal Subject		Diabetic Subjects	
		Non-cannabis user (20)*	Cannabis user (20)*	Non-cannabis user (20)*	Cannabis user (20)*
1.	Mean±SD	98.5±12.3 mg	86.6±7.2 mg	268.7±48.5 mg	205.4±30.7 mg
2.	Range	84.2 to 105.7 mg	75.5 to 95.6 mg 20.00	250.7 to 295.5 mg	1925 to 224.5 mg 20.00
3.	P-value	> 0.001		> 0.001	

*figures in paranthesis indicate the number of subjects/patients.

RESULTS AND DISCUSSION

The present study was conducted on 80 males subjects aged between 35 to 65 years comprised of 60 volunteers acted as study group and 20 normal health subject acted as control. These subjects were divided into four groups comparing of 20 in each. Normal subjects with and without using cannabis. Similarly diabetic persons with and without cannabis for the last one year.

It is evident from table-I that fasting blood sugar level ranged from 84.2 to 105.7 with a mean of 98.5±12.3 mg percent in normal subjects. These values are resembled with the finding of Devid et al (1985) the blood sugar level was found to decrease 86.6±7.2 with a range of 75.5 to 96.4 mg

percent in normal subjects using cannabis indica since last one year. The decrease was statistically significant as evident by p-value which is less than 0.001. The decrease in blood sugar level in cannabis under normal person might be due to decrease activity of catecholamines which in turn reduce the blood sugar level. (Patel et al. 1985).¹⁹.

The fasting blood sugar level in diabetic subjects not using cannabis was found to be 268.71 ± 48.5 with range of 205.7 to 292.5 mg percent. This value was found to be decreased to 205.4 ± 30.7 with range of 192.5 to 224.5 mg percent in diabetic subject using cannabis indica since last one year. The decrease in blood sugar level in this cannabis user diabetic group was found to be statistically significant as evident by p-value (<0.001). It might be possible that cannabis might enhance the insulin secretion resulting decrease the blood sugar level in the groups or it might facilitate in the penetration of sugar into the cell for catabolic process leading to decrease the blood sugar level.

There are considerable information in literature about the effect of cannabis on food intake. Increased craving for sweet after ingestion of cannabis have been noted in human population which favour the result of present study.

SUMMARY AND CONCLUSION

1. The study was conducted on 80 male subjects comprising of 60 volunteers acted as study group and 20 normal healthy subjects as control.
2. The subject were presented themselves on the basis of personal relationship and on request.
3. The subject were divided into two groups viz. normal and diabetics and each group was sub-divide into two sub groups viz. cannabis user and non-cannabis user.
4. Blood samples of control as well as study groups were analyzed for fastign blood sugar level.
5. The blood sugar level was found to be significantly decreased in cannabis user as compared to that of non- cannabis user normal subject who takes 5 to 10 gm cannabis daily for the last one year. It might be due to decreased activity catecholamines by the effect of cannabis.
6. Statistically significant decrease in blood sugar level was recorded in diabetic patients using 5 to 10 gm cannabis per day for the last one year as compared to non-cannabis user diabetic subjects. It might be possible that either cannabis may enhance the insulin release or increase the penetration of sugar into the cell.

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