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Effects of Figs on Blood Glucose Level

Kunal Thakur[1], Udaybhan Yadav[2], Mimansha Tiwari[3]

Assistant Professor, Microbiology ID, ZSCT's Thakur Shyamnarayan Degree College,Mumbai, India[1]

Co-ordinator, Microbiology ID, ZSCT's Thakur Shyamnarayan Degree College, Mumbai, India[2]

Student, Microbiology ID, ZSCT's Thakur Shyamnarayan Degree College, Mumbai, India[3]

Abstract: *Figs have a high nutritional content and few calories. Abscisic acid (ABA), a naturally occurring hormone that controls the body's response to glucose and lowers inflammation, is abundant in figs. Researchers evaluated the extract's ability to reduce blood sugar levels in a glucose solution at different concentrations. This subject was chosen to investigate how figs affect blood sugar levels. In a sugar solution of 200 mg/mL distilled water, the enzymatic activity of figs was examined. The medical term for elevated blood sugar is hyperglycemia (blood sugar). It usually takes high blood sugar (glucose) levels, above 180 to 200 milligrams per deciliter (mg/dL), for hyperglycemia to manifest as symptoms. At 530 nm, the outcome was then spectrophotometrically verified. A steady decline in descending order was observed. As a result, figs' sugar-lowering activity was demonstrated..*

Keywords: Figs

I. INTRODUCTION

The ficus tree (ficus carica), a member of the mulberry family, is where common figs can be found. They are currently cultivated all over the world in temperate areas, but they originated in Western Asia and the Middle East. With other fruits, a flower almost always blooms first, frequently engulfing the tree or bush in stunning bloom. The fruit that you pluck then develops from the blossom[1]. But figs are an exception. You only see a tiny fig as it starts to form, then it enlarges and eventually changes color to indicate that it is ready for harvest. But no blooms were visible. The fig tree does, in fact, produce blooms, but they are hidden inside the little "fruit"-like structure. In botanical terms, a fig is an inflorescence, which is a fleshy, hollow container coated on the interior with several tiny flowers[2]. A syconium is a particular variety of multiple fruit.

Using the glycemic index, foods are ranked according to how rapidly or slowly they elevate blood sugar levels. The lower a food is on the glycemic index scale (0–100), the smaller its impact on blood sugar stability. The quicker glucose is released into your bloodstream with a higher food ranking, creating a sharp rise in blood sugar. With a glycemic index of 51, figs fall within the low GI category[2].

Regular consumption can aid heart and intestinal health as well as blood sugar regulation.

The typical range of fasting blood glucose levels is between 70 mg/dL (3.9 mmol/L) and 100 mg/dL (5.6 mmol/L). It's advised to check your blood sugar levels and make lifestyle modifications when it's between 100 and 125 mg/dL (5.6 to 6.9 mmol/L) or higher. A diagnosis of diabetes is made if two separate tests of fasting blood glucose show 126 mg/dL (7 mmol/L) or greater[3]. Depending on whether the person has diabetes or not, their fasting blood plasma glucose (FPG) may be within the normal range.

Fresh figs are low in calories and contain a variety of vitamins and minerals. However, dried figs are high in sugar and calories.

The chlorogenic acid present in figs helps in reducing blood sugar levels in diabetics. Potassium which is found in abundance in figs also plays a good role in control of blood sugar levels[3].

They are also a rich source of alkaloids, triterpenoids, vitamin C, and flavonoids, a subgroup of polyphenols, along with potassium, magnesium, zinc, copper, manganese, iron, and vitamin A, C, K and B. A study by National Center for Biotechnology Information (NCBI) in 2017 claimed that figs significantly lower risk of diabetes. The fiber-rich properties help in enabling the insulin function of the body, lowering the risk of diabetes. Fig leaf extracts are also helpful in improving the body's insulin sensitivity.

Using the original Sumner-developed 3,5-dinitrosalicylic acid (D.N.S.A.), a method for calculating blood sugar, cerebrospinal fluid, etc., is given (1921)[4].

If necessary, outcomes can be obtained in less time than ten minutes. The technique works effectively for meeting diabetes clinic requirements in hospital laboratories and estimating random blood glucose. The reagents are inexpensive, reliable, and simple to use. The results are fairly close to the actual glucose levels seen in the cerebrospinal fluid and blood. The method has been used in a busy clinical laboratory because it is quick and easy to use, and it is accurate enough for all routine work[4].

II. METHODS AND MATERIALS

Collection of Samples: The fresh samples of Fig fruit were collected from the nearby market. The edible part of the edible part was separated and used to determine its enzymatic activity in sugar solution.

Fig. 1 Figs

Fig. 2 Fig Paste

Extraction of raw material: The separated edible part of the fig was crushed into a fine paste using mortar and pestle. Upon adding a little water, it was further strained and filtered using a funnel and filter paper to remove all clots for a smooth and effective procedure.

Fig 3 Fig enzyme and sugar solution

Preparation of Sample:
Sugar Solution: Mix 200 mg sugar into 20 ml distilled water.
DNSA Reagent: Prepare 20 ml DNSA reagent

Requirement Table:

Table 1:

Content	Volume	Quantity
Sugar Solution conc. : 20 mg/ml	20 ml	-
Sugar	200 mg	-
Distilled water	20 ml	-
Reagent: DNSA (3,5-dinitrosalicylic acid) 20 ml		-
DNSA	200 mg	-
NaOH (Sodium Hydroxide)	200 mg	-
Sodium Crystal Pellets	40 mg	-
NaS	10 mg	-
Sodium Tartarate	8 mg	-
Glassware:	-	
Clean and dry test tubes	-	6
Clean and dry pipettes	10 ml 1 ml	1 1
Miscellaneous: Colorimeter at 530 nm	-	1

Fig. 3 DNSA Reagent   Fig. 4 Test tubes with sugar solution   Fig. 5 Colorimeter

**Procedure and Observation Table:**

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Table 2:

Sugar Solution (ml)	Distilled Water (ml)	Fig Sample (ml)	Wait for 30 minutes	DNSA Reagent (ml)	Bother for 5 minutes	O.D.
0.0	1.0	1		3		0.0
0.2	0.8	1		3		0.21
0.4	0.6	1		3		0.43
0.6	0.4	1		3		0.67
0.8	0.2	1		3		0.83
1.0	0.0	1		3		0.97

Result after 1:20 dilution

Result:

The enzymatic activity of lowering sugar levels in figs is measured. A graph was successfully plotted with the results obtained from the DNSA test. A gradual decline is observed. The sugar concentration increases by 0.2 ml in each test tube, while an equal amount of fig sample is added to all 6 test tubes.

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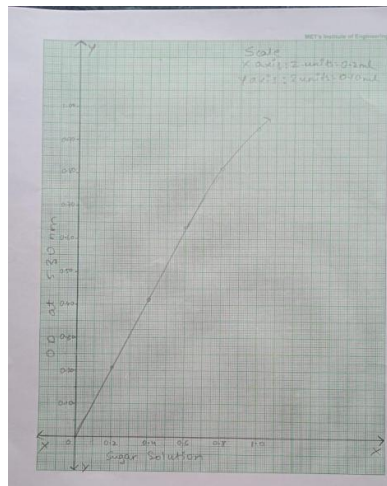
III. CONCLUSION

Based on this experiment, it has been checked and studied that figs do reduce blood sugar levels. As figs are naturally sweet and also help in lowering the blood sugar level, they are recommended for diabetic patients. In addition to their natural sweetness, figs provide fiber and antioxidants. If portion-controlled, they can fit into any meal plan.

IV. ACKNOWLEDGEMENT