

Study of Antihyperglycemic Effect of Medicinal Plant Fenu Greek –Anti Diabetic

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Abstract – Now a day's natural /herbal product are more useful rather than synthetic products because of their high medicinal values, biocompatibility, availability and cheaper cost. The aim of the present paper is to highlight hypoglycemia (glyro compound) apart from other functional groups present in fenugreek seeds .This is done with a help of fast, accurate and analytical tool of ATR/FTIR. The extract of fenugreek seeds is taken in the powder form and passed through FTIR along with KBr pellets. So, that the bioactive compound like glyro obtained from the data in a short span can be used for diabetic treatment by ayurvedic experts.

Index Terms – Synthetic, Hypoglycemia, Functional groups, Fenugreek

INTRODUCTION

Diabetes mellitus is a chronic metabolic disease characterized by derangements in the metabolism of carbohydrates, proteins and lipids caused by complete or relative insufficiency of insulin secretion and/or insulin action. The disease is a major medical concern as it is costly in individual, social and economic terms and its global burden is increasing in most populations. Although, biguanides and sulphonylurea are valuable in the treatment of diabetes mellitus, their use is limited by limited action, pharmacokinetic properties, secondary failure rates and accompanying side effects.

Herbal medicine plays an important role in anti-diabetes treatment. Fenugreek (*Trigonella foenum-graecum*) has been used as a source of antidiabetic compounds from its seeds, leaves and extracts in various model systems .Fourier transform infrared spectroscopy (FTIR) is a fast and

nondestructive analytical method. Associated with chemometrics, it is a powerful tool for the pharmaceutical industry. It is becoming a suitable technique for analysis of herbal medicine. This review focuses on the recent developments and updates for the qualitative and quantitative analysis of herbal medicine using FTIR. Moreover, it can be implemented during herbal drug development, in production for process monitoring, or in quality control laboratories.

MATERIALS AND METHODS

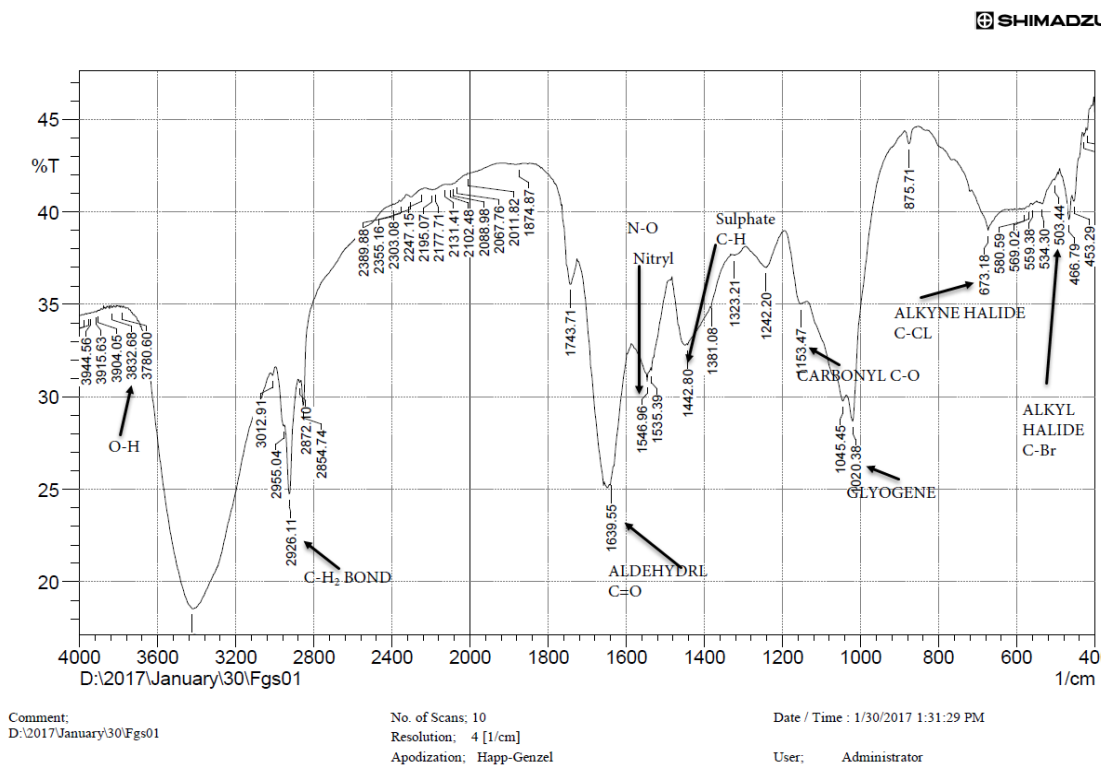
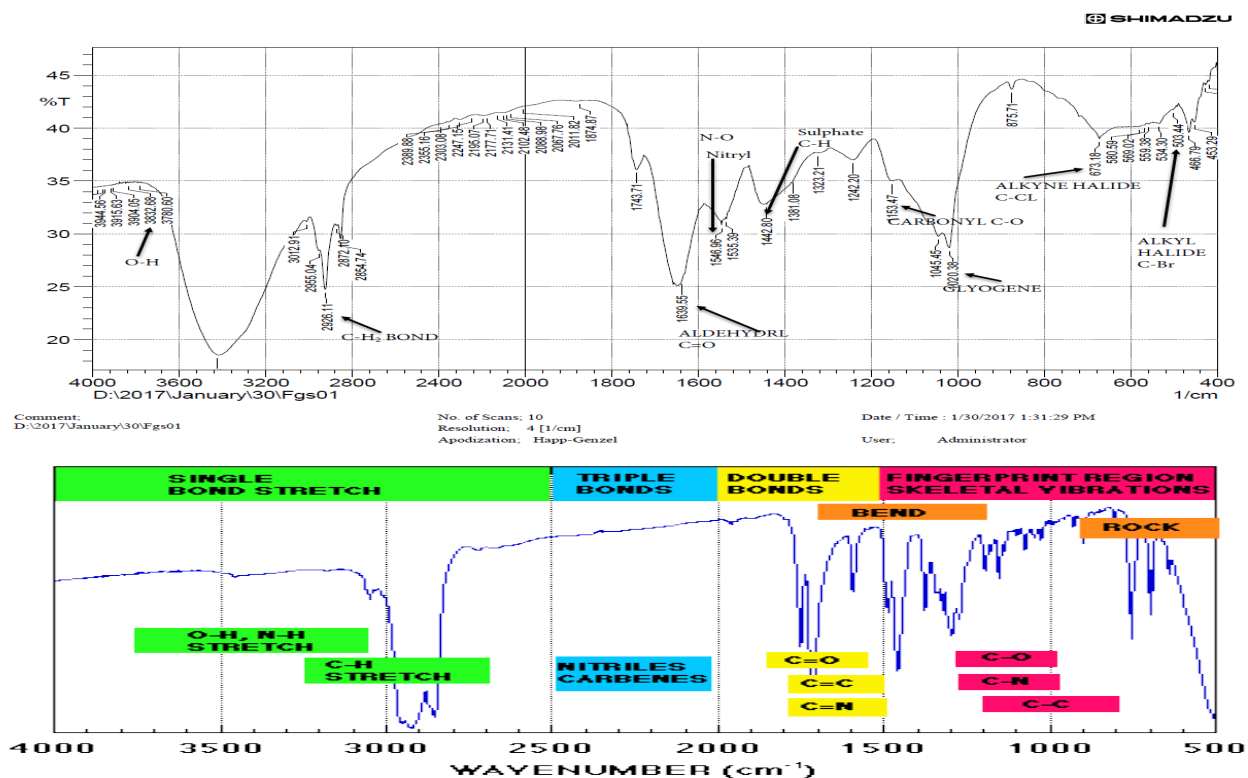
Fenugreek seeds are collected from local supermarket and dried for two days at normal temperature .then it is made into powder through normal electrical grinder and fine powder is filtered from all other particles .this fine powder is stored in air free tight container and used as bio sample for FTIR spectra study purpose at the required time .

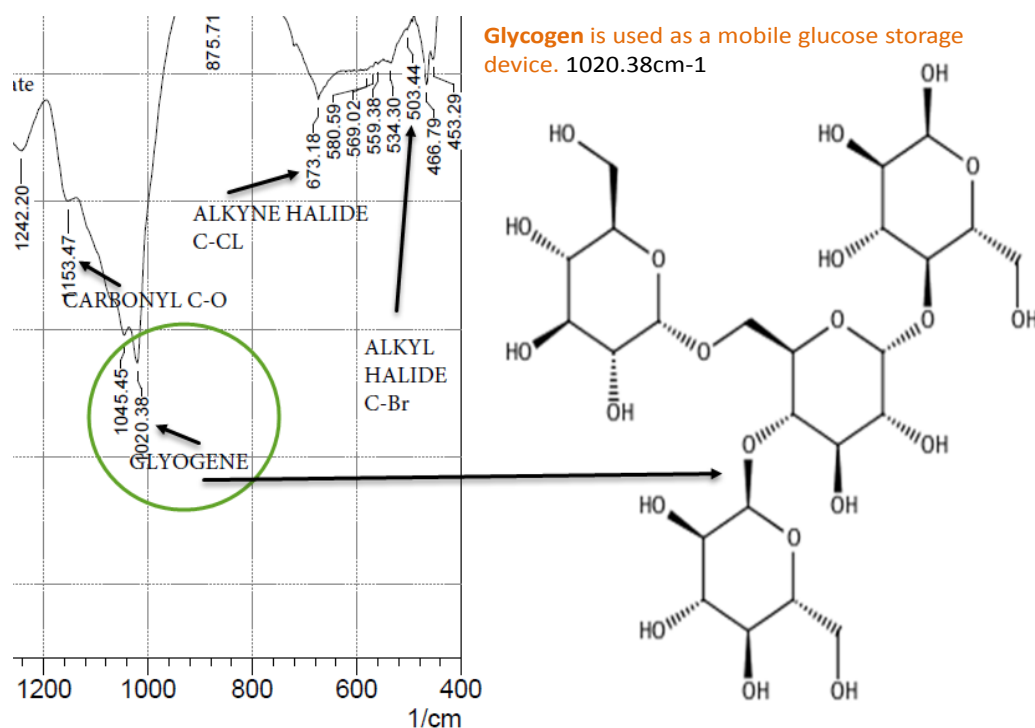
FTIR:

FTIR is the most powerful tool for identifying the types of chemical bonds (functional groups) present in compounds. The wavelength of light absorbed is characteristic of chemical bond as can be seen in the annotated spectrum. The powdered sample of fenugreek seeds was loaded in FTIR spectroscope (shimadzu), with a scan range from 400 to 4,000 cm^{-1} in the mid IR region with a resolution of 4 cm^{-1}

RESULTS AND DISCUSSIONS

The FTIR spectrum is in the figure. The data on the peak value and the probable functional groups are highlighted:





EVALUATION OF FTIR SPECTRUM

Sl. No.	Peak range in cm ⁻¹	Types and functional group	Bonding pattern	
1	3809	H ₂ O	O-H	
2	2924	Carboxylic acid.	O-H stretching vibration	
3	2852	Alkyl	C-H stretching	
4	1737	Ester	C=O stretching	
5	1631	Amide	C=O stretching	
6	1444	Aromatic(eugenol)	C-H bending	
7	1325	Finger Print Region	Alkyl halide	C-F stretching
8	1265		Alkyl halide	C-F stretching
9	1155		Alkyl halide	C-F stretching
10	1101		Alkyl halide	C-F stretching
11	1020	Glycogen(acetol carbohydrate)	functional group,	-CHO and ketone
12	813	Methyl eugenol		C-H bending
13	0534	Alkyl halide		C-Br stretching
14	0516	Alkyl halide		C-Br stretching

FTIR SPECTRAL DATA INTERPRETATION

The characteristic band at 3809 cm^{-1} (for O-H group), 2924 cm^{-1} (for C-H stretching), 2852 cm^{-1} (for C-H stretching), 1631 cm^{-1} (for C=O stretching), 1444 cm^{-1} (for C-H bending), 1020 cm^{-1} (for glycogen) were exhibited by the sample. From the results obtained in the present study, it could be concluded that, the various functional groups observed probably indicate the presence of eugenol, carbohydrates-glycogen, amides, esters and alkyl halides. Among the functional groups observed in the sample, carbohydrates-glycogen has got the ability of producing glycogene which infact balance sugar levels .

CONCLUSION

PRESENCE of GLYROGENE IN FENUGREEK HELPS TO REDUCE SUGAR LEVELS.SO IT IS USED IN MANY AYURVEDIC MEDICINES LIKE MEHTI,IME-99 .

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