

An Innovative Scientific Breakthrough technology to achieve conversion of Fructose which will result in toxic free sucrose and also conversion of Glucose to make low GI sucrose.

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Abstract: *An Indian herbal technology to answer the world challenge to achieve toxic free sucrose and making sugar a low GI sucrose. The aim of the research is to convert Fructose and convert Glucose to achieve the above task. This will answer the alarming concern of sugar intake by the world population and also ease out the life of Diabetic world. The technology is designed with the power of organic engineering.*

Key Words: *Conversion of Fructose, toxic free sucrose, Conversion of Glucose, low GI sucrose, XON the organic solvent.*

Running Title: *Toxic Free Low GI Sucrose*

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I. Introduction

Revolution, the research foundation was started in the year 1987 by the author at Chennai. The aim of the research foundation is to study the ancient Tamil heritage life science. Extensive studies were made in the field of physiology, anatomy, pathology, medicine, food & nutrition, agriculture, water management and environment study.

In our long journey of research, Revolution undertook to answer many world challenges. Extensive studies were made in exploring the original methodology of ancient medicine making. Specific studies were made in studying the molecular science of medicine with respect to the life span of the medicine. Carefully analysed the role of mercury in medicine making by the ancient Tamil civilization.

The existing food and nutrition of our daily life was researched by Revolution and found many many chemical impurities which are the cause for most of the diseases suffered by the humanity. Agricultural outputs are the major reasons for many number of chemical impurities in our food production and consumption. Population raise is the major reason for the chemical based agriculture which has spoiled the germ index of the soil to a great extent. Revolution realised the urgent need to address one of the major critical issue needed to be addressed under any cost.

“Making Carbohydrates Digestive Friendly to restore Bio equilibrium”.

Under the above mentioned banner Revolution undertook the major challenge to address the issue of sucrose, a disaccharide carbohydrate. The aim is to develop the technology to provide the humanity toxic free sucrose and also Low GI sucrose by conversion of fructose and conversion of Glucose with the post harvest technology research designing. The need to undertake the world challenge to make sugar toxic free is due to the fact that the diabetic world has become too huge in the recent past.

The only way to help the humanity is to make sucrose toxic free and at the same time sucrose a low GI food. At the same time the fructose in sucrose is always remind a tough challenge to the scientific community which is the cause for creating lactate, LDL protein and fatty liver and cardio vascular problems. Through the power of organic engineering the post harvest technology was developed by the author using the method of endothermic process to achieve conversion of fructose into digestive monosaccharide carbohydrate and conversion of glucose molecules into gluco pyranose groups which will result in toxic free sucrose and Low GI sucrose. The world scientific community involved in food science research in the last 25 years found processed food ready to eat is the cause for many diseases. They also had shown concern over the cooking salt intake is the causes for many other health issues. In the last 20 years the scientific community researched the sugar intake of the present world population increased by three times over the last hundred years. Fructose is the major challenge for the human metabolic harmony, scientist have found hidden sugar in most of our processed food is very much on the higher side. World health organization came out with strict recommendation to consume only six teaspoon of sugar (one teaspoon is four grams) per day. However this will not help the present human population due to the usage of processed food which is very much on the higher side.

The world challenge is the absence of solvent to test sugar in GCMS. The greatest achievement by Revolution is to invent an organic solvent by the name XON to exercise Gas Chromatography & Mass

Spectrometry (GCMS), to test sugar and comparative test results were shown addressing fructose challenge. The only way to help the world population is to make sucrose toxic free and a low GI food with the help of chemical free organic engineering.

II. Research Design

The author made extensive study on ancient Tamil science contributed by many scholars provided or gifted many facts of Nature to the future humanity with all their findings relevant to various branch of science. Innumerable number of plant kingdom components is used in our traditional system of daily cooking. The ancient science believes in fresh cooked food twice a day which will result in healthy life not allowing metabolic syndrome to set in.

There are procedures to prepare drinking water which will provide us non contaminated bacterial free water for our daily consumption. Specific works are made to procure food ingredients time to time during seasons and scientific storage specification is followed to protect the value of every food component.

With an experience of studying the food and nutrition part of ancient science the author carefully chosen seven plant kingdom ingredients which are used in our system of daily cooking in South India. The medicinal property of these seven major ingredients are highly valuable to maintain our human metabolism intact at all times.

These seven ingredients are

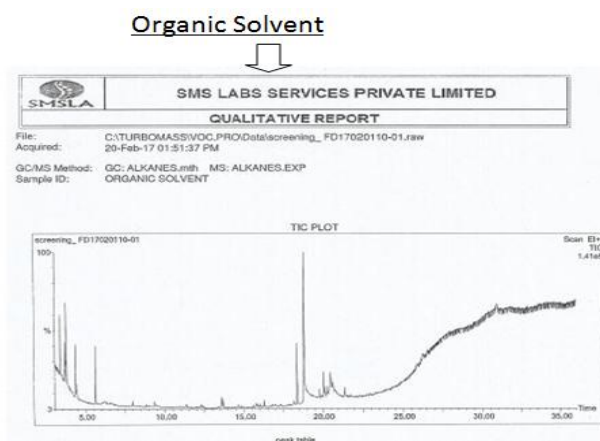
1. Black Pepper
2. Dried Ginger
3. Cinnamon
4. Fenugreek
5. Gooseberry
6. Pomegranate
7. Turmeric

Using the seven ingredients, colorless, odorless and tasteless herbal water is produced with the help of simple traditional method. 40ml of this herbal water is used to blend One kilogram of Sucrose. The wet sucrose is kept overnight and taken up for drying the next day. After drying no color change or physical change in observed. This endothermic process is effective in resulting total conversion of Fructose and conversion of Glucose in the treated sucrose. The treated sucrose will be toxic free and Low GI food.

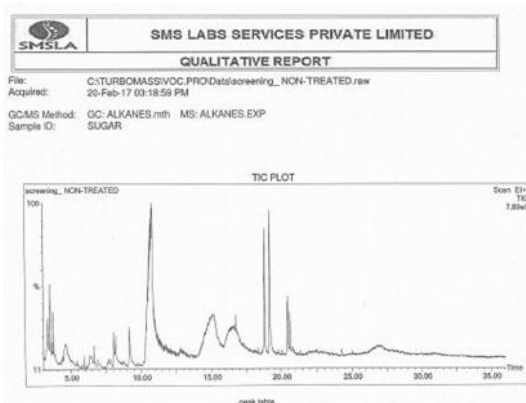
III. Results and Discussions

The unique power of organic engineering is carefully chosen to address the world challenge making sucrose toxic free and low GI food. The only way to achieve the tough task is to make conversion of fructose and conversion of Glucose. Efforts are well made to achieve the target. The essence of Organic Engineering is to device the technology support without any artificial chemicals or solvents. The herbal water was produced to achieve the goal and was tested with SGS lab, C-Tech Lab and SMS Lab and found the water base tool is completely heavy metal toxic free and chemical residue toxic free and pesticide residue toxic free. Using the raw material from the Nature, the primary goal is to make sure no toxicity of various levels should be found in the tool – The herbal Water.

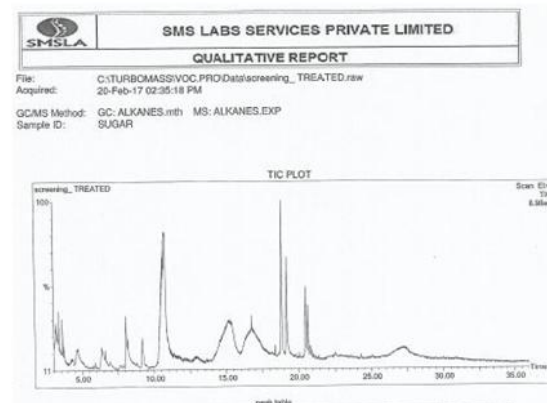
Molecular analyses were tried with HPLC RID, LCMS/MS, FRIT, NMR and Mass Spectrometry could not determine required results to prove the targeted results. Absence of solvent to test sucrose in GCMS was the issue to prove the conversion of fructose and conversion of glucose molecules in sucrose. The tremendous effort was put in to innovate an organic solvent the XON was achieved and the comparative study of treated and non treated sucrose from the same batch was tested using XON, the organic solvent in GCMS number of times.



Non Treated Sugar



Treated Sugar



Observation

Sucrose is the most abundant disaccharide (the common table sugar) is made up of alpha-D-glucopyranose and beta-D-fructofuranose which are bound through a glycosidic bond between the C-1 (alpha) of glucose and the C-2 (beta) of fructose.

In the raw sugar HMF, 3-furaldehyde, D-glucopyranose, 1,6-anhydro and D-glucofuranose, 1,6-anhydro compounds are observed in the ratio of 40:5:27:13.

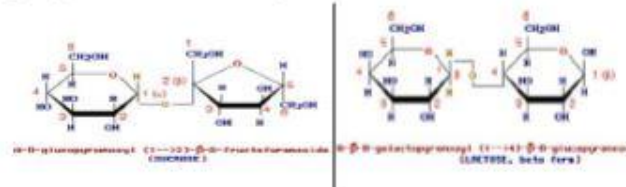
In the treated sugar D-glucopyranose-1,6-anhydro, D-glucopyranose,4-o-D-Galactopyrosyl, Borane, tris(1-methylethyl), 2 Furan Carboxaldehyde-5-methyl, 2,5-dimethyl-4-hydroxy-3-furanose, D-Allose and Furfural compounds are observed in the ratio of 25:10:20:4:3.5:3.5.

It has been observed that HMF and 9-oxibicyclo non-6-en-2-one in the raw sugar is 100% converting and the same compounds are presented in the treated sugar.

HMF and D-glucofuranose are maximum converting into glucopyranose, Borane, tris(1-methylethyl) and only 7% of the furan based compounds are present in the treated sugar.

This may consider that maximum fructose molecules are converting into other forms except few furan based compounds are present in the treated sugar likely Furan Carboxaldehyde-5-methyl, 2,5-dimethyl-4-hydroxy-3-furanose at 7%.

Therefore sucrose is a glycosylglycoside and its complete name should be alpha-D-glucopyranosyl (1->2) beta-D-fructofuranoside but since fructose also uses its anomeric carbon for the glycosidic linkage the name beta-D-fructofuranosyl (2->1) alpha-D-glucopyranoside can be indifferently used.



In the treated sugar observed that there is no D-fructofuranosyl alpha-D-glucopyranoside and this may also indicates that the fructose based compounds are converting.

It has been observed that Hexadecanoic acid, in the supplied organic solvent and the same is present in the raw and treated sugar during analysis in GC/MS.

It has been observed that Palmitoleic acid, Tetradecanoic acid and Octadecanoic acid are present only in the treated sugar so that it clearly shows this compounds presence only in the treatment process.

It has been observed that D-Allose is present only in the treated sugar which is D-aldoses family and this compound is not abundant in nature.

WHO affiliated high end lab, The Micro Therapeutic research centre was chosen to carry out an animal model study to support the GCMS results. Observation was found, the group of Mice consumed normal sugar and blood glucose levels were on the higher side and insulin secretion during the period were found in low levels compare to the group of Mice consumed treated sugar were having blood glucose level disappearing fast and insulin level in the same period of time was on the higher side.

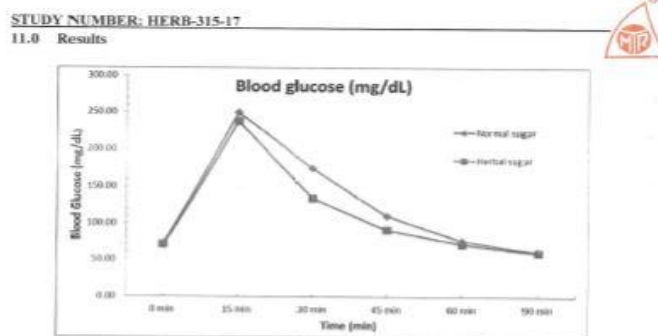


Fig 1: Comparison of Blood glucose level in normal sugar and herbal treated cane sugar

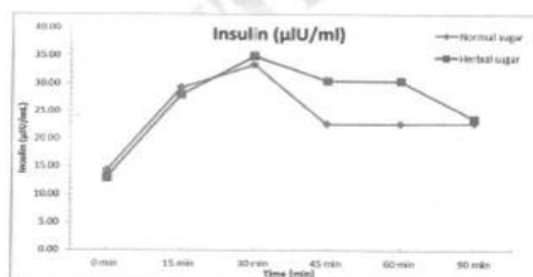


Fig 2: Comparison of serum insulin level in normal sugar and herbal treated cane sugar

The FDA approved lab, Glycemic index Lab Toronto, Canada was chosen to carry out the GI of treated sucrose using VIVO human model. GI labs, Toronto Canada carried out the VIVO test protocol according to WHO standards and found the treated sugar was declared with a GI of 50 + or – 3. The result of treated sugar GI found less than 55 were clearly declared a Low GI food.

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Summary

The glycoemic index value of LO-GI Sugar was determined in 10 healthy subjects using the standard ISO method (ISO 26942:2010). LO-GI Sugar is an herbal treated sugar. The GI values are expressed on the glucose scale where the GI of glucose=100 and white bread=71. The GI value (Mean±SEM) of the food tested was:

Test Meal	Glycoemic Index*	GI Category**
Dextrose control (50g)	100	High
LO-GI Sugar	50±3	Low

* The listed GI value(s) is/are only valid as long as product ingredients, formulation, processing, and/or any other material production factors remain unchanged.
** Using the classification of ISO 26942:2010, products with a glycoemic index (GI) less than or equal to 55 are classified as being low GI, those with a GI of 56 to 69 are classified as medium, while those with a GI equal to or greater than 70 are high GI.

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Figure 1: Postprandial glucose responses to LO-GI Sugar (LGI5ug) and the 50g Dextrose control (Dex50) (mean of 2 meals, 10 subjects each). All meals contained 50g of available carbohydrate. Data are expressed as Mean±SEM.

The above mentioned vital testing exploration are showing evident observation with respect to conversion of fructose and conversion of glucose molecules present in treated sucrose compared to normal sucrose. The conversation of fructose and glucose molecules is clearly leading to digestive monosaccharide carbohydrates up to cellular respiration. Hence, the technology achieved toxic free sucrose and sucrose a low GI food. All the above mentioned scientific validation reports is available in the given link for the benefit of the viewers.

<https://www.dropbox.com/s/bl2t6rtw1us1b9i/sugar%20book%20.pdf?dl=0>

The sugar production through cane and beet reached two hundred million metric tonnes per year. The importance given to refined cane & beet sugar by the human population is very clear due to the fact that the refined sugar add only sweetness to all forms of sweet food preparations at the same time sugar has a sweetener do not interfere with the flavour of the other food material involved in such preparation. The raw material from the Nature chosen to device this technology is abundance available which will enable the scalability to introduce the technology to meet the global demand.

IV. Conclusion

Augustin Pierre the French scientist first discovered fructose molecule in the year 1847. British chemist William miller coined the word fructose in 1857. The scientific community started researching the fructose molecule and its reaction to human biochemistry from the year 1970 onwards. Hence it is declared that the refined sugar is white poison due to fructose molecule. Also the higher glycemic index of sugar is always the challenge to the huge diabetic world. The most disturbing factors are the artificial sweeteners (Aspartame, Sucralose & Stevia) which are highly injurious to human health and also cannot be destructed by the catabolism due to their higher molar mass. The only way forward is to address the real issue molecular part of sugar.

Fourteen long years of research enable us to develop the herbal technology to address the toxicity in sucrose and also make sucrose a low GI food. The real achievement is to innovate an organic solvent to test sucrose in GCMS to prove the results of Glucose and Fructose molecule conversion after the herbal treatment. The technology is carefully designed with the power of organic engineering without any artificial chemicals or solvents. The thirst to provide an answer to the psychological appetite of sugar and sugar related products for the huge global diabetic population made this achievement possible. This technology is also carefully designed for its scalability which will result in addressing the global need. The above mentioned innovative technology achievement is awarded by Limca Book of Records, Indian book of Records, World record India, Asian book of records, Golden Book of Records and A Doctorate to the author from the university of World Record.

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