ISSN: 2230-9926

Available online at http://www.journalijdr.com

IJDR

International Journal of Development Research
Vol. 07, Issue, 12, pp.17647-17648, December, 2017

ORIGINAL RESEARCH ARTICLE OPEN ACCESS

SFRP 4 AS A BIOMARKER FOR TYPE 2 DIABETES MELLITUS

***Vasukidevi Ramachandran**

Associate Professor, Department of Biomedical Engineering, Bharath Institute of Science and Technology, Chennai-600073, 173, Agaram Road, Selaiyur,Tamil Nadu, India

ARTICLE INFO

Article History:
Received 29th September, 2017
Received in revised form
04th October, 2017
Accepted 29th November, 2017
Published online 29th December, 2017

Key Words:
Type 2 Diabetes, Diabetes, IGT, Impaired Glucose Tolerance, NGT, Normal Glucose Tolerance, SFRP4:
Secreted Frizzled-Related Protein,
T2DM: type 2 diabetes, ELISA.

ABSTRACT

Recent evidence suggests that type 2 diabetes mellitus is a fast growing disease in world wide. The multiple complications are associated with T2DM.Serum secreted frizzled-related protein 4 (SFRP4) is a biomarker for T2DM. 503 patients with impaired glucose tolerance (IGT) and normal glucose tolerance (NGT) were investigated. Majorityof the patientsbelong to the low socio-economic groups between 40-70 years. These 503 participants, 407 females and 96 were normal females. ECG (Electrocardiogram) parameters were also in the study. SFRP4 levels were measured by ELISA kit SFRP4 levels were associated with a higher risk ofdeveloping type 2 diabetes (T2DM),attempt was to provide an outline for T2DM by SFRP4 estimation, will be an important tool to detect the early diabetes.

Citation: Vasukidevi Ramachandran. 2017. "'SFRP 4 as a biomarker for Type 2 Diabetes Mellitus", *International Journal of Development Research*, 7, (12), 17647-17648.

INTRODUCTION

Type 2 diabetes mellitus (T2DM) is a metabolic disorder as a biomarker to identify the high-risk individuals.In the prevention of type 2 diabetes, (T2DM) is in the early stagesof research. The secreted frizzled-related protein 4 (SFRP4) is highly expressed in thepancreatic islets, and its levels increases several years before diabetes diagnosis. Themain feature and importance of this SFRP4 is more on T2DMpatients suggesting thatSFRP4 may play role in glucose metabolism. The receptors for SFRP4 have beenfound in many organs of our body including pancreatic β cells and its effects on metabolism and regulating the body weight.

MATERIALS AND METHODS

A total of 503 participants were included in the study, of which407 T2DM patients were females) and 96 were normal females.

Corresponding author: **Vasukidevi Ramachandran,**
Associate Professor, Department of Biomedical Engineering, Bharath Institute of Science and Technology, Chennai-600073, 173, Agaram Road, Selaiyur,Tamil Nadu, India.

The following parameters were studied: Blood pressure, ECG (Electrocardiogram). In the ASSAY TECHNIQUE, BG MLT ELISA KIT was used for quantitative determination of SFRP4.

RESULTS

The T2DM control and patients information were collected from 503 participants and were analyzed using statistical program .The details are represented in Table 1 and 2. Chi-square test was used to find the association between morbidity and SFRP4 abnormality with 5% level of significance. The values are represented, parentheses percentages. In the present study, the majority407 T2DM patients (80.9% of them were females compared to 96(19.1%) normal females ranging between the age group of 40 to 70 years. A high level of SFRP4 level was observed among them (38.5±0.6). The Prevalence of diabetes and normal diabetes subjects were 18 (3.6%),

DISCUSSION AND CONCLUSION

Females outnumbered normal female in getting T2DM where as in this study, the normal female outnumbered females around 80.9%.

Table 1. Descriptive statistics for qualitative information

1	Age (years)	
	31-50	118 (23.5)
	51-60	230 (45.7)
	61-70	155 (30.8)
2	Only Females	
	Patient Female	407 (80.9)
	Normal Female	96 (19.1)
3	Systolic BP (mmHg)	
	< 140	411 (81.7)
	≥ 140	92 (18.3)
4	DiastolicBP (mmHg)	
	< 90	371 (73.8)
	≥ 90	132 (6.2)
5	SFRP4 Level	
	< 15 pg	18 (3.6)
	≥ 15 pg	485(6.4)

Table 2. Descriptive statistics for quantitative information

S.No	VARIABLES	RANGE	MEAN	SE (MEAN)
1	Age (years)	41 – 70	46.3	0.31
2	SFRP4 Level	5 – 85	38.5	0.63

In the case of SFRP4 male patients outnumbered the females patients. Similarly 503 patients were as they were known to be prone for diabetic and metabolic diseases which were always high. In study, 76%of the patients were in the age group of 51-60 years. In this study our revealed systolic hypertension around 18.3 % and diastolic hypertension around 6.2%. The diabetes and normal patients, with same age group around 70% had T2DM where as in this study, none of them showed any diabetes and just around 2% were showing pre-diabetic level symptoms.

The estimation of SFRP4, revealed around 96.4% higher level of SFRP4 (more than 15 pg). In the present study, SFRP4 played a vital role in preventing diabetes, probably by means of insulin secretion and sensitization, through SFRP4.SFRP4 secretions were associated with a higher risk of developing T2DM.

REFERENCES

Bergmann, K. *et al.* 2014. Secreted Frizzled-Related Protein 4 (SFRP4) and Fractalkine (CX3CL1) Potential New Biomarkers for β-Cell Dysfunction and Diabetes. *Clin Bio chem.* 2014; 47 (7-8): 529-532. doi: 10.1016/j. clinbiochem..03.007.

Mohan V, Amutha A, Ranjani H, *et al.* 2013. Associations of β-cell function and insulin resistance with youth-onset type 2 diabetes and prediabetes among *Asian Indians. Diabetes Technol Ther.* 15: 315–322. doi: 10.1089/dia.2012.0259.

Relationship between serum secreted frizzled-related protein 4 levels and the first-phase of glucose-stimulated insulin secretion in individuals with different glucose tolerance *Article in Endocrine Journal.* 2015; 62: 8. doi: 10.1507/endocrj.EJ15-0212.

****