

# Study of irisin hormone level in type 2 Diabetic patients and patients with diabetic Nephropathy

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## Objectives:

Irisin hormone is normally present as part of a larger protein Fibronectin domain-containing protein 5 (FNDC5) in a muscle cell's outer membrane, where it lies dormant and inactive. Exercise (and other unknown factors) cause this protein to be split, releasing irisin, which exits the muscle cell to other cells of the body causing conversion of some white fat cells to brown fat cells and islet cells of pancreas which are told to produce more insulin .<sup>1</sup>

There is controversy concerning irisin level in plasma that it is reduced in Type 2 Diabetic .<sup>2</sup>

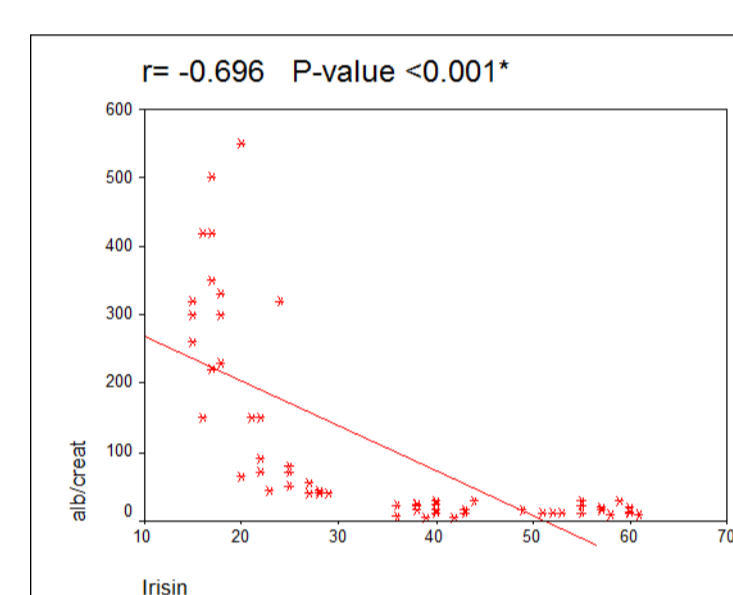
Preliminary studies suggest that irisin is decreased in Type 2 diabetic patients with renal insufficiency (GFR<60ml/min/1.73m<sup>2</sup>).<sup>3</sup> We aimed in this work is to study Irisin Hormone level in Type 2 diabetic patient . Also, to study the relation between Irisin Hormone level and diabetic nephropathy.

## Methods:

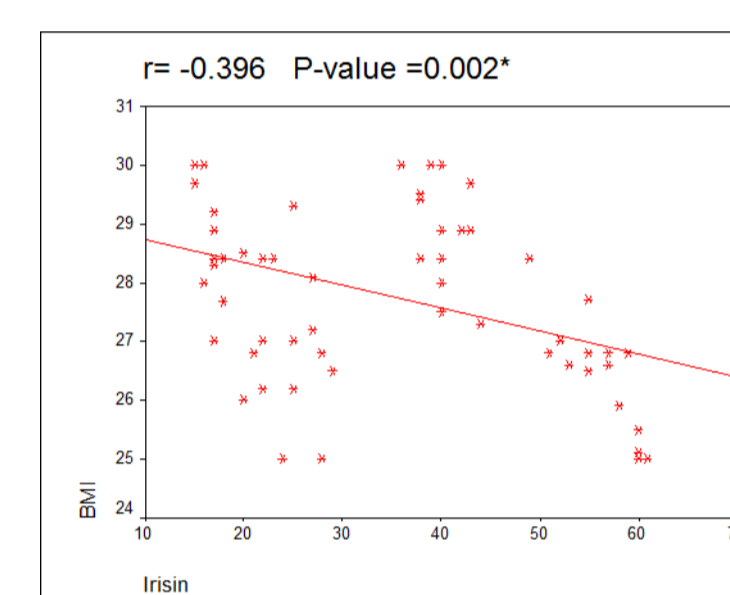
We recruited 60 type 2 diabetic subjects and 30 healthy controls. Diabetics will be divided into 30 patients without complications and 30 with diabetic nephropathy(DN). Serum Irisin, fasting blood glucose(FBG), 2hours plasma glucose (2hPG), hemoglobin A1c, serum creatinine and albumin/creatinine ratio were measured.

alb/creat	Irisin			ANOVA	
	Range	Mean ± SD	F	P-value	
<30	36.000 - 61.000	47.967 ± 8.853	119.166	<0.001*	
30-300	15.000 - 29.000	22.895 ± 4.241			
>300	15.000 - 24.000	17.636 ± 2.541			
TUKEY'S Test					
<30&30-300	<30&>300	30-300&>300			
<0.001*	<0.001*	0.114			

comparison between patients with different ranges of albuminuria as regard serum Irisin



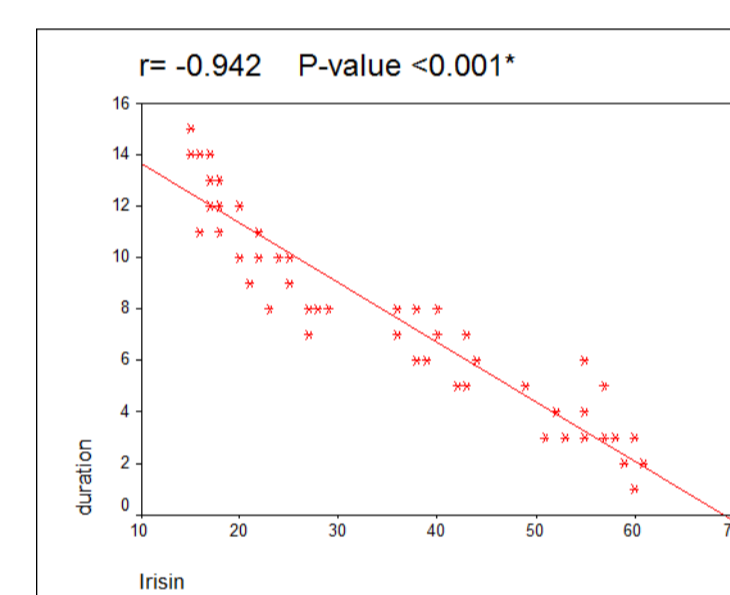
correlation between irisin and alb/creat.



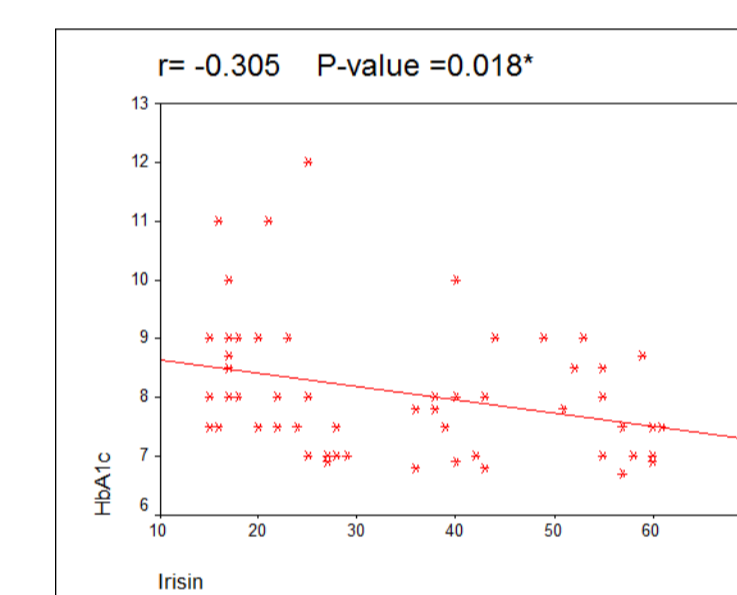
correlation between irisin and BMI.

Final model	Unstandardized Coefficients		Standardized Coefficients		T-test		R <sup>2</sup>
	B	Std. Error	Beta	t	P-value		
(Constant)	65.04	1.59		41.02	0.00		88.45%
duration	-3.84	0.18	-0.94	-21.28	0.00		

Stepwise Regression Analysis for determination of the most important predictor of serum irisin



correlation between irisin and duration of diabetes.



correlation between irisin and HbA1c.

## Results:

Irisin was significantly decreased in type 2 diabetic patients compared to control ( $34.46 \pm 15.28$  ng/ml vs.  $152.600 \pm 39.581$  ng/ml,  $p < 0.001$ ). Patients with DN had lower irisin than diabetics without complications ( $20.967 \pm 4.476$  ng/ml vs.  $47.967 \pm 8.853$  ng/ml,  $P < 0.01$ ). There was a significant negative correlation between irisin and systolic blood pressure ( $r = -0.493$ ), diastolic blood pressure ( $r = -0.625$ ), serum creatinine ( $r = -0.729$ ), duration of diabetes ( $r = -0.942$ ), albumin/creatinine ratio ( $r = -0.696$ ), BMI ( $r = -0.396$ ) and HbA1c ( $r = -0.305$ ) in all diabetic patients. ( $p < 0.05$ ). Multivariate regression analysis showed that duration of diabetes is the only independent determinant for irisin level.

## Conclusions:

There is a decrease in serum irisin level in patients with type 2 diabetes and a further significant decrease in patients with diabetic nephropathy.

## References:

- 1-Aggarwal k (2012) : Irisin : The Hormone for Obesity and Diabetes Control. *Indian journal f Clinical Practice* 22:429
- 2-Choi , Kim M, Bae K, et al., (2012): Serum irisin level in new – onset type 2 Diabetes. US National Library of Medicine National Institutes of Health *100(1):96-101*
- 3-Liu jj, Liu S, Wong MD, et al.,(2014):Relation ship between circulating irisin,renal function and body cumposition in type 2 diabetes.Diabetes complication 28(2):208-13.

