

## RESEARCH ARTICLE

# The Role of Nkx-6.1 Gene Expression in Diabetic and Non-diabetic Patients

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## ABSTRACT

In the pancreas, NKX6.1 gene is required and play important role in proliferation of beta cells in human and is a also sometimes dual role in transcription regulator role that links to the region riches with AT -sequences that is found in promoter region of desire genes. In this study, we focus on the role of Nkx-6.1 gene on the in B cell and Diabetes mulitas, it was found that the Diabetic patients had lower expression of Nkx-6.1 gene than the non-diabetic and the expression varied from male to female patients and varied according to ages.

**Keywords:** Diabetic patients, Nkx-6.1 gene expression, Nondiabetic patients.

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**Conflict of interest:** None

## INTRODUCTION

The Nkx-6.1 gene play an important role in beta cell pancreatic cells, this gene expression decrease in diabetic patients. researcher found that the beta cell having more Nkx6.1 product could play an important role in diabetes mellitus. Genetic studies mentioned that the different expression levels of Nkx6.1 gene corelated with Type 2 diabetes mellitus (T2D).<sup>1,2</sup> When the expression of Nkx6.1 gene is lower than normal expression level, there is a high chance of finding relation of development of T2D in humans.<sup>3</sup> Recent studies showed that Nkx6.1 gene is important required and enough to present of beta cells to differentiating and developing endocrine progenitor in the embryo,<sup>4</sup> that is increase the chance of Nkx6.1 can play to keep the identify mater of mature beta cells. At last, these results lead to the fact that Nkx6.1 gene is a regulator factor of beta cells role and recognition in mature persons.<sup>5,6</sup>

## MATERIAL AND METHODS

### Samples

A complete of 130 men and female (age 25–45 years) were registered in this study, one hundred patients with DM who have attended

Specialist, Center for endocrinology and diabetes and other clinics, and 30 healthy individuals with matches as a control group

### RNA Extraction

Total blood samples were collected from vein of 100 Iraqi patients with DM and 30 healthy samples as a control. RNA of these samples was extracted by using RNA extraction kit (Geneaid extraction kit, Korea).

### Gene Expression

Designed set of two primers were used in this study to amplify the desired region used: forward primer and reverse primer. Also, an additional set of primer were used to amplify the reference gene to use it in calculation as a house keeping gene. RNA then converted to cDNA by genaid Kit. The obtained cDNA went through Real Time PCR and the thermal cycling program was, initial denaturation 96°C for 6 min, followed by 35 cycles of first denaturation 95°C for 30 sec and of annealing and florescence screening 55°C for 30 sec and extension 30 sec. Folding of the gene expressions then calculated.

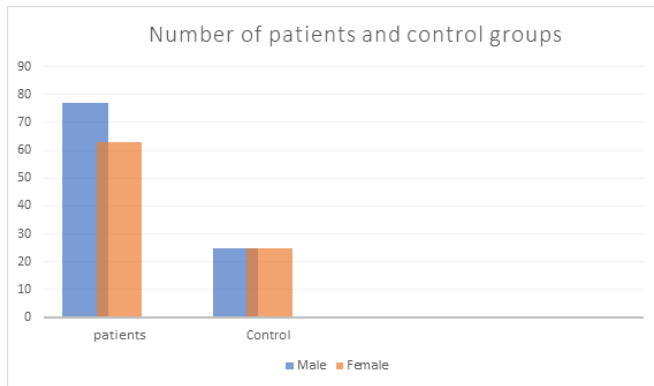
## RESULTS AND DISCUSSION

In this study, after divided the patients in two groups male and female (Figure 1), we determined the expression of Nkx-6.1 gene in 77 male, 53 female patient and non-diabetic as control group.

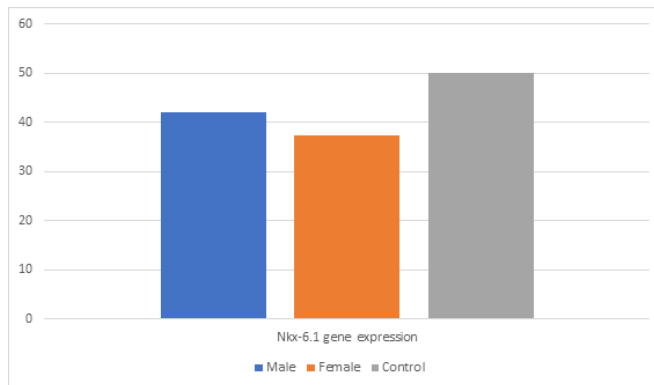
It was found that the expression of NKx-6.1 gene in the diabetic patients decreases in connection with the progression of the diabetic severity cases.

The effect of diabetic on the expression of NKx-6.1 gene in female is more frightening than male patients. The lowest

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**Figure 1:** Number of patients and control groups



**Figure 2:** Nkx-6.1 gene expression in Male, Female and Control group

activity of NKx-6.1 was found in female patients and the highest expression found in control group while the moderate activity found in male patients (Figure 2).

NKX6.1 gene is a transcription factor that is transit in  $\beta$  cells of the adult human pancreas.<sup>7,8</sup> Our results suggest that NKX6.1 activates discouraged with the progression of diabetic cases. as many researchers mentioned that the developing  $\beta$  cell affected by the levels of expression of this gene and that is corelated with the severity of diabetic case, the lower level of NKX6.1 gene the more developing of diabetes.<sup>9-11</sup>

## CONCLUSIONS

- NKX6.1 gene is a transcription factor that is transit in  $\beta$  cells of the adult human pancreas and effect directly on the developing of diabetes mulitas cases.
- The lower level of NKX6.1 gene the more severity of diabetes

- The expression of NKX6.1 gene in female patients is lower than male patients.

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