

## Abstract

**Title of the study:** Serum hepcidin levels in diabetes mellitus

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### Introduction

Diabetes mellitus is known to be associated with increased levels of body iron stores. The mechanisms that link these conditions are unclear. Hepcidin is known to play a key role in iron homeostasis. It is possible that changes in hepcidin may underlie the association between these two conditions. What little data are available in this area are inconclusive.

### Aim

To estimate serum levels of hepcidin and iron-related parameters in adults diagnosed to have diabetes mellitus, and compare these with levels of these parameters in those without diabetes mellitus.

### Methods

Informed consent was obtained to collect fasting blood samples from adult males who were diagnosed, for the first time, to have diabetes mellitus (DM). Age-matched males

with fasting glucose values within the reference range served as control subjects. Each sample obtained was used to estimate haemoglobin, glucose, C-reactive protein (CRP), ferritin, total iron-binding capacity (TIBC), iron and hepcidin. Anthropometric measurements were also made on each subject.

## **Results**

Twenty one subjects were studied in each group. Both groups were similar in age and anthropometric measurements. There were no differences in values of haemoglobin, TIBC, transferrin saturation and serum iron between controls and diabetics. Serum ferritin levels were significantly higher in those with DM (median [interquartile range]: 147 [114-251.5] ng/ml) when compared with controls (79 [46.65-155.5] ng/ml). Serum hepcidin levels were similar in the 2 groups. Ratio of hepcidin to ferritin was significantly lower in those with DM when compared with control subjects. Serum ferritin showed significant positive correlation with fasting plasma glucose, serum iron, serum hepcidin and transferrin saturation. It also showed significant negative correlations with total iron-binding capacity, hepcidin-ferritin ratio, BMI, waist and hip circumference. Hepcidin-ferritin ratio was negatively correlated with fasting plasma glucose levels. When adjusted for fasting plasma glucose levels, in multiple regression analysis, it was found that serum ferritin had significant positive correlation with serum hepcidin, hepcidin-ferritin ratio, serum iron and transferrin saturation.

## **Conclusions**

Serum ferritin, a marker of body iron stores, was significantly increased in subjects with diabetes mellitus, but hepcidin levels were not. However, these patients had lower hepcidin-ferritin ratio, showing that serum hepcidin levels were inappropriately low for the increased serum ferritin levels seen in these subjects. This suggests that the biological response of the body to increase hepcidin levels in response to increased body iron levels seems to be blunted in diabetic subjects. This finding requires confirmation in larger samples and its significance requires exploration.

**Keywords :** Hpcidin, diabetes mellitus, ferritin, iron