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### Association of fasting insulin with plasma, RBC micronutrients copper and zinc in newly diagnosed type 2 diabetic patients

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**Statement of the Problem:** Copper and Zinc are extremely important trace elements involved in a number of metabolic processes. Imbalance of trace elements may be the consequence of certain disorders (Khan 1994). Zn plays a major role in the synthesis, storage and secretion of insulin as well as conformational integrity of insulin in the hexameric form. The decreased Zn affects the ability of the islet cell to produce and secrete insulin thus compound the problem, particularly in Type 2 diabetes. Cu is an integral part of numerous enzymes like cytochrome c- oxidase, superoxide dismutase involved in metabolic processes.

**Methodology & Theoretical Orientation:** The aim of this study was to find out the association between fasting plasma insulin and plasma, Cu-RBC and Zn-RBC among both the control healthy, newly diagnosed type 2 DM. A case control study was carried out in the Department of Biochemistry jointly with the Department of Endocrine Medicine of Bangabandhu Sheikh Mujib Medical University. A total of 64 non-smokers, non-alcoholic, normotensive subjects free from renal and hepatic diseases were included in this study. Among them thirty three were newly diagnosed by type - 2 DM. Thirty one were age and sex matched healthy control.

**Findings:** Mean±SD of fasting insulin was 13.13±7.87 µU/mL and 16.53±13.78 µU/mL in healthy controls and newly diagnosed type 2 DM. The median value of RBC Zn of both groups was 6984.00 ppb (ranging 5693.50-7796.00 ppb) and 5155.50 ppb (ranging 2820- 6153 ppb) respectively (p<0.001). Significant negative correlation was found between plasma Insulin and RBC Zn (p< 0.0001, r = -0.7881) in newly diagnosed type 2 DM. All the median values of trace elements significantly differed between groups.

**Conclusion & Significance:** Micronutrients derangement could be related to type-2 diabetes mellitus development as well as its complications.

### Biography

Humaira Binte Asad is currently serving as an Assistant Professor in Biochemistry at Laboratory Services Department at National Institute of ENT. She completed her MBBS from Dhaka Medical College and MD (Cli. Biochem) at Bangabandhu Sheikh Mujib Medical University. She joined government job after qualifying BCS (health) in 1995. Since then, she served at different Thana Health Complexes in different districts. She also served at Medical Colleges and Institutes like Dhaka, Sir Salimullah, Faridpur Medical College and NIDCH. She has a number of publications at national level. She is the Press and Publication Secretary of running Executive Committee of Bangladesh Society of Medical Biochemists and also the Executive Editor of Bangladesh Journal of Medical Biochemistry. She is a Member of Human Genome Organization. She was trained in Medical Biotechnology. As a member of organizing committee she arranged different national conferences of BSMB.

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