Antioxidant glutathione (GSH) levels are decreased in type 2 diabetes (T2DM), this may be related to glycaemia. GSH concentration and rates of synthesis in persons with and without type 2 diabetes were compared and used to determine if any relationships are due to glycaemia. We recruited 8 non-diabetic persons, 7 persons with T2DM without complications as well as 9 persons with T2DM with diabetic microvascular complications. Fasting glucose, HbA1c, and lipids were measured. After an overnight fast, we infused H2-glycine for 8 hours. GSH kinetics was determined by liquid chromatography mass spectrometry. Compared to non-diabetic persons, persons with T2DM had lower GSH concentrations (0.90 ± 0.15 vs. 0.35 ± 0.08 mmol/L; P=0.001). Absolute synthesis rates (ASR) (1.03 ± 0.19 vs. 0.50 ± 0.17 mmol/L/day; P = 0.07) were lower in T2DM persons. Compared to non-diabetic persons, persons with complications had lower GSH Concentrations (0.22 ± 0.04 mmol/L; P < 0.001) and ASR (0.31 ± 0.06 mmol/L/day; P < 0.03). There were no significant differences in GSH levels between persons with T2DM and persons with complications (P-values > 0.1). GSH concentration was not correlated with fasting glucose (r = -0.32; P = 0.12) or HbA1c (r = -0.25; P = 0.26). The ASR was not correlated with glycaemia (P-
values > 0.17). Microvascular complications significantly correlated with glutathione concentration ($r = -0.51; P = 0.012$) and absolute synthesis rates ($r = -0.42; P = 0.04$).

Persons with T2DM have glutathione deficiency especially those with diabetic Microvascular complications. This is probably due to reduced synthesis and increased irreversible utilization by non-glycaemic mechanisms.

**Keywords:** Fallon Kristie Lutchmansingh; glutathione, metabolism; Type 2 Diabetes (T2DM); glycaemia, stable isotope infusion; liquid chromatography mass spectrometry (LC-MS).