

**KORELASI KADAR OSTEOKALSIN  
DENGAN GLUKOSA PUASA PADA  
DIABETES MELITUS TIPE 2**

**TESIS**



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# KORELASI KADAR OSTEOKALSIIN DENGAN GLUKOSA PUASA PADA DIABETES MELITUS TIPE 2

## ABSTRAK

**Latar Belakang:** Diabetes melitus (DM) merupakan masalah kesehatan masyarakat yang meningkat sangat cepat. Diabetes melitus berpengaruh kepada jaringan tulang secara primer sehingga mengubah kualitas tulang, mengakibatkan peningkatan fragilitas tulang dan risiko fraktur. Osteokalsin dibentuk oleh osteoblas, berperan dalam homeostasis glukosa, diregulasi oleh *undercarboxylated osteocalcin* (ucOC). Hubungan tulang dengan metabolisme glukosa telah ditemukan pada dekade terakhir. Penelitian ini bertujuan membuktikan korelasi kadar osteokalsin dengan glukosa puasa pasien DM tipe 2.

**Metode:** Penelitian ini merupakan penelitian analitik dengan rancangan potong lintang terhadap 21 orang pasien DM tipe 2 yang melakukan pemeriksaan darah di Laboratorium Sentral RSUP Dr. M. Djamil Padang. Penelitian dilakukan mulai bulan Oktober 2017 sampai Oktober 2018. Kadar osteokalsin diperiksa dengan metode *electrochemiluminescence immunoassay* (ECLIA) dan kadar glukosa puasa diperiksa dengan metode enzimatis heksokinase. Analisis statistik menggunakan uji Spearman. Hasil uji statistik dianggap bermakna jika  $p < 0,05$ .

**Hasil:** Subjek penelitian sebanyak 21 orang laki-laki pasien DM tipe 2. Rentang usia berkisar antara 40-76 tahun. Rerata kadar osteokalsin dan glukosa puasa berturut-turut pada DM tipe 2 adalah 16,89 (7,64) ng/mL dan 175,33 (46,84) mg/dL. Uji korelasi Spearman menunjukkan korelasi negatif lemah tidak bermakna antara osteokalsin dengan glukosa puasa pada DM tipe 2 ( $r = -0,343$  ;  $p > 0,05$ ).

**Simpulan:** Terdapat korelasi negatif lemah antara osteokalsin dengan glukosa puasa pada DM tipe 2.

**Kata kunci:** osteokalsin, glukosa puasa, diabetes melitus tipe 2

## **CORRELATION BETWEEN OSTEOCALCIN LEVEL AND FASTING GLUCOSE IN TYPE 2 DIABETES**

### **ABSTRACT**

**Background:** Diabetes mellitus (DM) is a public health problem that increases very rapidly. Diabetes mellitus can affect bone tissue primarily so that it changes bone quality, and results in increase bone fragility and risk of fracture. Osteocalcin is formed by osteoblasts, contributing to glucose homeostasis, regulated by undercarboxylated osteocalcin (ucOC). The relationship of bone to glucose metabolism has been found in the past decade. This study aims to prove the correlation between osteocalcin levels dan fasting glucose in type 2 DM patients.

**Method:** This was an analytic study with cross-sectional design of 21 patients with type 2 DM who conducted blood tests at Central Laboratory of RSUP Dr. M. Djamil Padang. The study was conducted from October 2017 to October 2018. Osteocalcin level was performed by electrochemiluminescence immunoassay (ECLIA) method and fasting glucose level by enzymatic hexokinase method. Statistical analysis using the Spearman test. Statistical test results were considered significant if  $p < 0.05$ .

**Results:** Subjects were 21 male patients with type 2 DM. Age ranges ranged from 40-76 years. The mean levels of osteocalcin and fasting glucose respectively in type 2 DM were 16.89 (7.64) ng / mL and 175.33 (46.84) mg / dL. Spearman correlation test showed a weak negative correlation was not significant between osteocalcin and fasting glucose in type 2 diabetes mellitus ( $r = -0.343$ ;  $p > 0.05$ ).

**Conclusion:** There is a weak negative correlation between osteocalcin and fasting glucose in type 2 DM.

**Keywords:** osteocalcin, fasting glucose, type 2 diabetes mellitus