

Evaluation of plasma lead concentration in osteoporotic patients by anodic stripping voltametry

F. Sadeghi^{1,*}, M. Oveisi², N. Sadeghi², B. Jannat³, S.M. Rezayat¹, M. Behzad²

¹*School of pharmacy, Azad university, Tehran, Iran*

²*School of Pharmacy, Tehran University of Medical Sciences, Tehran, Iran*

³*Food and Drug Laboratory Research Center, Ministry of Health, Tehran, Iran*

Background and Aims: Osteoporosis is a multifactorial disease with dimension of genetic, endocrine function, exercise and nutritional considerations. Of particular considerations are trace elements and heavy metals such as lead. A few reports have shown an association between bone mineral density (BMD) and the blood lead level in Asian populations. The aim of this study was to present data from the association of plasma lead levels with BMD in Iranian women.

Methods: Participants were selected by inclusion and exclusion criteria from those who were referred to Jamie Clinic in Tehran for BMD evaluation. Femur and Lumbar T-Score value were measured for bone density evaluation. The study was performed in participants who underwent a fasting blood withdrawal. Plasma samples were analyzed for lead concentration levels by anodic stripping voltametry method to compare case and control groups.

Results: Control group (n=51), were normal in both lumbar spine (L1-L4) and femoral neck (Tscore>-1). Femur Tscore was considered as criterion in selection of patient group (n=49) with T-score<-1. No differences were found in the nutritional status, number of diseases, drugs and functional activities between these groups. Mean±SD plasma levels of lead was 0.126±0.023 µg/ml in control group and 0.274±0.031 µg/ml in patients group.

Conclusions: Our results support an association between plasma levels of lead and BMD; the blood lead mean value of patients was significantly higher than the control group (p<0.05).

Keywords: Osteoporosis; Plasma; Lead; Voltametry