Through osteoformation and osteoresorption biochemical markers it is possible to identify metabolic bone turnover and then assess the synthesis of osteoblasts and osteoclasts. Predisposing risk factors for osteoporosis include age, gender, ethnicity, delayed menarche and nulliparity. In this work we measured bone density (BMD) in postmenopausal women (n=209) from eastern Slovakia, we observed ages associated with the beginning of menopause and defined the selected biochemical markers (ALP - alkaline phosphatase, OC - osteocalcin, PINP - N-terminal peptide pro-collagen type I, CTx - C-terminal telopeptide of collagen). Densitometric measurement was performed using the device: DXA Hologic Discovery W. Through the femoral and based on the measured T-scores postmenopausal women were divided into two groups: control group CG=104 (T-score up to -1.0 ), osteoporosis group OG=105 (T-score above -2.5). The blood samples were centrifugated (R Selecta, Spain) and separated blood serum, in which were determined selected biochemical markers of fully automated Cobas e411, Cobas Integra 400 plus analysators. The measured data were processed by the program Statistica ver. 10th. Based on Student's T-test we found significant differences between CG and OG in biochemical markers: osteocalcin (p<0.05) and PINP (p<0.01). Through correlation analysis, we found a significant difference at p<0.05 in CG when we compared the relationship between ALP and biological age, ALP and age of onset of menopause. Furthermore, we have found significant differences through correlation analysis in OG (p<0.05) in the relationship between the osteoresorption indicator - CTx and biological age. The work was supported by the Agency of Ministry of Education, Science, Research and Sport of the Slovak Republic, the project ITMS: 26110230100.