

## **Biochemical markers of bone metabolism in ardennes horse**

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Biochemical bone markers are liberated in the circulation during bone formation and bone resorption and can be measured with various methods. Bone formation markers reflect osteoblast activity and/or post-release metabolism of procollagen. Bone resorption markers reflect osteoclast activity and/or collagen degradation products. Bone turnover can be assessed by comparing the amount of substances released during bone formation with those of bone resorption. Bone matrix is mainly composed of type I collagen (90%) and non collagenous proteins, mainly synthesised by osteoblasts. Osteocalcin (OC) is a non-collagenous  $\text{Ca}^{++}$  binding protein mainly synthesised by mature osteoblasts. Newly synthesised OC is incorporated into the extracellular bone matrix but a small amount is released into the bloodstream. Type I collagen contains two  $\alpha 1$  chains and one  $\alpha 2$  chain. Carboxy-terminal telopeptide fragments of the  $\alpha 1$  chains (CTX-I) are liberated into the circulation during collagen degradation.

Osteocalcin and CTX-I have been studied in light horses but never in Ardennes horses.

The first aim of this study was to establish a profile of normal serum age-related concentrations of osteocalcin in Ardennes horses. For this first part, blood samples from 49 Ardennes horses apparently devoid of bone lesions (healthy) were collected. The second aim was to study two biochemical markers of bone metabolism, osteocalcin and CTX-I, in 32 young Ardennes horses, housed at the Horse European Center of Mont-Le-Soie during one year. A specific radioimmunoassay for equine osteocalcin was used to measure the concentration of the marker. The serum concentration of CTX-I was measured using an automated assay. The effect of age and sex was assessed. Levels of osteocalcin fall between birth and the adult stage: this decrease being most marked between 0 and 1 year of age. In the 32 foals, age had a significant effect on osteocalcin levels (negative correlation) and CTX-I (positive correlation). No significant difference was shown between the two sexes.