(24–55%), ultimate strain, ultimate stress (5–7%). The bone elastic strength was the highest in group III, receiving the vitamin D3 in amount excessing the standard requirement of rats. Summerizing it can be concluded, contrary to the assumptions, we did not confirmed the significant effect of increased vitamin D3 level in feed on MBD and most of the mechanical traits. However, the maximal elastic strenght was the highest in group receiving 5000 IU/kg of vitamin D3, which reflects the highest elastic strength of midshaft cortical bone under reversible deformation and the maximum stress which a bone can withstand before fracture, but the difference was not statistically confirmed.

Bone and Mineral Metabolism

BONE AND MINERAL METABOLISM MISCELLANEOUS

The Role of Thyroid Hormone 3,3 ', 5 - Triiodothyronine (T3) in the Expression of Osteocalcin and Lipocalin 2 (LCN2) in Osteoblasts

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Introduction: The thyroid hormone 3,3 ', 5 - triiodothyronine (T3) has an important role in bone physiology and metabolism, stimulating osteodifferentiation and bone homeostasis. Although there is this evidence, little is known about the synergistic events of T3 together with the endocrine role of other players that interfere with osteoblast metabolism, such as Lipocalin 2 (LCN2) and its hypothalamic-located MCR4 receptor. It is also known that LCN2 interferes at a physiological level with the parameters of food intake. **Objective:** To evaluate the role of the thyroid hormone 3,3 ', 5 - Triiodothyronine (T3) in the control of the expression of both Osteocalcin (OCN) and Lipocalin 2 (LCN2) in osteoblasts. **Materials and Methods:**. In order to understand the molecular and physiological mechanisms about that probable synergism, the experiments were as follows: Mouse pre-osteoblasts were challenged with T3 hormone treatments in three levels (1nM; 1.5nM; 2.0nM) and different times (0h; 24h; 72h). The samples were collected to perform gene expression of the main osteodifferentiation markers (RUNX2, OTX, BSP), matrix remodeling (MMPs, TIMPs, BMPII) and zymography assay for analysis of metalloproteinase activities (MMPs). **Results and Discussion:** Preliminarily, it was founded a synergism between the hormone T3 and LCN2 expression in osteoblasts, occurring the modulation of the marker genes of differentiation, extracellular matrix and hormonal synthesis. The T3 hormone acts in the modulation of RUNX2, OTX, BMP2, favoring osteodifferentiation and the remodeling of the matrix, probably activating the TIMP1-MMP9 and TIMP2-MMP2 complexes, mainly in hyperthyroid conditions. In addition, we note a direct influence of T3 on the both expression of both Osteocalcin (OCN) and Lipocalin 2 (LCN2). **Final Considerations:** Our preliminary data indicates that the hormone T3 acts on the metabolism of osteoblasts through the modulation of LCN2 and BMPII. These molecular findings need to be confronted with further analyzes in vivo for more conclusive physiological conclusions.