PIXE analysis of serum minerals in Long-Evans Cinnamon rats: effect of injected disodium etidronate on several essential elements

A. Ohta, Y. Sone, [*1]S. Nakayama, [*2]K. Hayakawa,
[*4]K. Sera, [*5]S. Futatsugawa, [*6]S. Hatakeyama and [*6]Y. Saitoh

Department of Radiology, [*1]Laboratory of Clinical Medicine
[*2]Center for Genetic Studies of Integrated Biological Functions
Kitasato University School of Medicine, Sagamihara, Kanagawa 228-8555, Japan

[*4]Cyclotron Research Center, Iwate Medical University
348-58 Tomegamori, Takizawa, Iwate 020-0173, Japan

[*5] Radioisotope section, Japan Radioisotope Association
2-28-45 Honkomagome, Bunkyo, Tokyo 113-8941, Japan

[*6] Nishina Memorial Cyclotron Center, Japan Radioisotope Association
348-58 Tomegamori, Takizawa, Iwate 020-0173, Japan

Abstract

Male Fischer and Long-Eans Cinamon rats(10 weeks old) were intaperitoneally injected with disodium etidronate. We made a PIXE analysis where single administration of two different disodium etidronate doses. After 5 and 10 minutes of administration, blood was taken out, then were digested by wet ashing technique. Serum minerals were determined by PIXE.

A dose（5mg/kg） equivalent to LD_{50} of disodium etidronate for rat resulted in moribund effect for rats. At the dose of 2.5mg/kg, concentration of K, P, Ca, Fe, Cu, and Zn increased in the serum.