Aluminum analysis in biological standardized reference materials

Y Katoh, T Sato[1)], Y Yamamoto[2)], Y Gotoh and K Yamamoto

Faculty of Health Sciences, School of Radiology, Tokyo Metropolitan University 7-2-10, Higashi-Ogu, Arakawa-ku, Tokyo 116-8551, Japan

*1) Tokyo Metropolitan Institute Neuroscience
2-6, Musashidai, Fuchu-shi, Tokyo 183-8526, Japan

*2) Department of Legal Medicine, School of Medicine, Shiga University of Medical Science
Seta-tsukiwa-cyo, Otsu-chi, Siga 520-2192, Japan

Abstract

We have investigated the multi-elemental abundances in biological materials by Instrumental Neutron Activation Analysis (INAA). The application of INAA for the Al determination has some problems: 1) the biological material includes P (several 10^3 to a few 10^4 ppm) and Si (several 10^2 to a few 10^3 ppm). 2) P and Si interfere with the Al determination due to $^{31}P(n,\alpha)\,^{28}Al$ and $^{28}Si(n,p)\,^{28}Al$ reactions.

In this study, P in biological standardized reference materials (SRMs) was determined by Liquid Scintillation Counter as a nuclear method. After being irradiated, the SRMs and comparative standards were treated using the ordinary nitric acid method. The samples were measured recurrently for a long-term. The determination of ^{35}S count rate in samples must be done post-160 day post-irradiation. Subtracting the decay-corrected ^{35}S count rate of post-160 day irradiation from that of the post-30 day post-irradiation; ^{32}P count rate in sample is capable of determining.