

## Aluminum analysis in living matter by neutron activation analysis

Y. Katoh, T. Sato <sup>\*1)</sup>, Y. Yamamoto <sup>\*2)</sup>, Y. Gotoh, K. Yamamoto

Tokyo Metropolitan University  
Higashiogu 7-2-10, Arakawa-ku, Tokyo 116-8551

<sup>\*1)</sup>Tokyo Metropolitan Institute Neuroscience  
Musashidai 2-6, Fuchu, Tokyo 183-0042

<sup>\*2)</sup>Shiga University of Medical Science  
Seta Tsukinowa-cho, Otsu, Shiga 520-2192

### Abstract

We have investigated the elemental abundances in organs of healthy standard Japanese male by INAA. The determination of Al by INAA in living matter contains some problems; 1) P and Si interfere the Al determination by  $^{31}\text{P}(n,\alpha)$  and  $^{28}\text{Si}(n,p)$  reactions. 2) The living matter and polyethylene sheet as enclosing bag includes P- and Si-compound as an addition and the abundant in matter, respectively. Therefore, in this study, we aimed to evaluate the corrected Al values for living matter by INAA.

The interference factors from P and Si were  $1.0 \times 10^{-3}$  (C.V.; 0.3 %) and  $3.1 \times 10^{-3}$  (3.0 %), respectively. The enclosing bags used in conventional experiments include as impurity equivalent to Al value from 0.2 to 116  $\mu\text{g/g}$ . The correction for biological standard materials was very excellent comparing with the certified values, contribution rate over  $10^3$ . For the human tissues that the contributions from Si were negligible for all cases from Si abundances in each specimens, the interferences from P was over 50 % except for lung. Our results decrease in comparison with reference value. The correction for interference reaction for Al determination in living matter is indispensable. The previous result for Al obtained by INAA should be reexamined and reviewed.