

CHARACTERISTICS OF ELEMENTS IN SALT -THEIR EFFECTS ON HUMAN HEALTH-

Momoko CHIBA, Atsuko SHINOHARA, and Hiromi WATANABE
Department of Epidemiology and Environmental Health,
Juntendo University School of Medicine, Tokyo 113

Yasuhiro KOMATSU
Chiba Children's Hospital, Chiba 226

It is considered that element composition in salt is different from place to place, and it contributes the characteristics of salt. The salt, which we intake everyday, may have the effects on human health. We analyzed concentrations of 53 elements in 171 salt samples. These samples were collected from 29 countries including Japan. Ninety (Group A) of them were edible use at homes, restaurants, or selling stuff at general markets, 63 (Group B) were put in meals provided in aircraft, 4 (Group C) were rock salt samples, and 8 (Group D) inedibles were used at Japanese funeral custom, and 6 (Group E) inedibles for body massage and unknown purposes. Elements, as many sorts as possible, were determined by the techniques of atomic absorption spectrometry, microwave induced plasma mass spectrometry, and colorimetric method. NaCl concentrations were calculated from Na concentrations determined. As the results, we found the followings;

1. NaCl concentrations were relatively high in all samples. The mean values of NaCl were 90.8, 90.9, 90.3, 92.0, and 84.1% in Groups A to E, respectively. The minimum value in Group A was 77.4%, and that in Group B was 69.2%.
2. The analytical data of Mg concentrations in edible samples were interesting; Mg contents in samples using in European countries such as UK, Norway, Poland, The Netherlands, Germany, and Russia and USA were very low, and those using in Asian countries such as Japan, Singapore, India, Thailand, Laos and Vietnam were very high, and the ratio was more than 100.
3. Ca concentrations were high in Group C. Al, Fe, Ni, and Sr concentrations were also high in Group C.
4. Sn, Pb, and Sb concentrations were high in Group D in comparison with those in the other Groups.
5. Mn, Rb, and Sb concentrations were high in Group E.
6. The samples which contained high Mg concentrations showed high K concentrations, and samples which contained high P showed high Al concentrations.
7. When the origin of the salt or the purpose of the salt are assumed, Mg, K, Ca, P, Al, and other trace elements in the samples, may be the useful indicator.

So far our research work on this project was analyzing many samples, and we obtained tremendous data, which have not been published in the world. We will continue this work in order to observe the relationship between human health and elements in salt.