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P021 CONCENTRATION OF CHLORINE IN RICE PLANT COMPONENTS

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Chlorine is an essential element for plants, but there is not enough information on its behavior in plants. Therefore, it is important to obtain the distribution of chlorine in plant components. Rice is a staple food in Asian countries, and the inedible components are utilized as compost and feed for livestock.

In the present study, entire rice plants were collected and the concentration of chlorine in several plant components (polished rice, rice bran, hull, leaf, stem and root) was determined by an instrumental neutron activation analysis. A 50 mg of dried-powder sample was sealed in a separate small polyethylene bag, and several bags were placed together into a polyethylene capsule. The capsules were irradiated in the Japan Atomic Energy Agency JRR-4 reactor (flux rate: 3.2×10^{17} n/m²/s) for 20 s. The irradiated samples were cooled, and the activity of ³⁸Cl was counted with a Ge gamma-ray detector for 300 s.

The concentration of chlorine in the roots was the highest (4800 mg/kg DW) and that in the polished rice was the lowest (180 mg/kg DW) among the plant components. The content of chlorine in the polished rice was about 2% of the entire plant. The rest was present in the inedible portions, and about 75% of the total chlorine content was in the straw. The concentration of chlorine in different leaf positions varied by more than one order of magnitude, and was well correlated with the concentration of potassium. This may be attributed to the fact that the translocation rate of chlorine among the leaf blades with aging is relatively similar to that of potassium. This study was supported by the Ministry of Education, Culture, Sports, Science and Technology, Japan.

P022 ASSESSEMENT OF IODINE CONTENT IN BRAZILIAN DUPLICATE PORTION DIETS AND IN TABLE SALT

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Low iodine diet levels present a serious threat to human health that can lead to severe health disorders. Since iodine deficiencies can be prevented and reduced by increasing its intake through fortified salt, Brazil adopted the fortification in the 50's as a means of controlling and preventing disorders caused by iodine deficiencies. However, high iodine intake has been detected in some countries. Excess dietary intake may increase the risk for the hyperthyroidism in the elderly. This study investigated iodine dietary intake by Epithermal Neutron Activation Analysis (ENAA) analyzing duplicate portion diet and fortified table salt samples. ENAA was used so as order to reduce the main interferences from sodium and chloride. Duplicate diet samples were obtained from a group of twenty-five steel mill workers from the city of São Paulo, over a 3-day-period. The samples were freeze dried, mixed and homogenized. Fortified table salt brands were collected from the market and were analyzed with no pre-treatment. Assays for the iodine concentration in the table salt samples revealed values between 24.1 to 64.9 mg kg⁻¹. The average iodine daily intake for the worker's diets was 813 µg/day, ranging from 402 to 1363 µg/day. In some cases daily intakes were around 10 times higher than the recommended dietary allowance (RDA) value (150 µg/day).

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