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Trace elements and foods

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Abstract:

Knowledge of dietary element intakes is important from the standpoint of radiation protection, nutrition, and medical monitoring. It is also of interest to know the relationships for both radioactive and non-radioactive nuclides (stable elements) in food chains. Therefore, the dietary intakes of both radioactive and non-radioactive nuclides have been analyzed since early 1980s for the radiation purpose. There are several procedures for assessing individual food intake, e.g. selective studies of individual food, market basket studies (MBS), duplicate portion studies, model dish studies, and 24-hour dietary recall and food record methods. The MBS is now recommended as one of the best methods. A single or multiple methods are chosen to obtain reliable results based on the purpose, subjects etc, of the study being expected because each method has both merits and demerits. Recently, highly sophisticated instruments such as inductively coupled plasma mass spectrometry (ICP-MS), inductively coupled plasma atomic emission spectrometry (ICP-AES) and so on, have become valuable instrumental methods for trace element detection because of their low detection limits, high precision, wide dynamic range, and capability for multi-element analyses. In this review, eighteen stable elements and five radioactive nuclides in eighteen food categories were determined using a market basket study to clarify the food pathways of each element in Japanese subjects. The daily intakes of them for Japanese were also estimated. Dietary intake studies by using eighteen or more food categories should be an effective procedure to resolve critical foods and critical pathways for Japanese.

Key words: [trace elements](#), [dietary intake study](#), [market basket study](#), [duplicate portion study](#), [mineral intake](#), [radionuclides](#), [food](#)



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