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[\[PDF \(1215K\)\]](#) [\[References\]](#) [\[Supplementary Materials\]](#)**Statistical Analysis of Rice Samples for Compositions of Multiple Light Elements (H, C, N, and O) and Their Stable Isotopes**[Takashi KORENAGA^{1\)}](#), [Masaaki MUSASHI^{1\)}](#), [Rumiko NAKASHITA^{1\)}](#) and [Yaeko SUZUKI^{1\)}](#)*1) Department of Chemistry, Tokyo Metropolitan University***(Received May 24, 2010)****(Accepted June 7, 2010)**

Stable isotopic compositions and elemental contents of the H, C, N, and O in 163 rice samples were analyzed. The samples were taken from three different farming countries; Japan ($n = 103$), United States of America ($n = 30$), and Australia ($n = 21$), in addition of Asian rice samples from Thailand ($n = 2$), Vietnam ($n = 1$), and China ($n = 6$) as comparison. They were mostly short grain samples known as “Koshihikari,” with several samples of middle and long grains included. All samples were grown in the presence of either natural manure or artificial fertilizer. The climate of the rice farming environment was diverse, from arid to humid. Excluding δD data showing large uncertainty, according to the statistical analysis of the principal components based on the stable isotopic compositions such as $\delta^{13}C$, $\delta^{15}N$, and $\delta^{18}O$ of rice samples, the Japanese rice samples were clearly distinctive from the Australian and the American rice samples. This fact may be explained by the regional differences in isotopic signatures of the climate, utilized nutrition, and/or quality of irrigation water among the farming countries. This statistical distinction could be one of the useful tools to extract the rice samples grown in Japan from those grown in the other countries.

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