Japan Geoscience Union Meeting 2013
(May 19-24 2013 at Makuhari, Chiba, Japan)

HTT32-04 会場:301B 時間:5 月 23 日 15:00-15:15

人類の食性に関する同位体生態学
Isotope ecology of human diet

大河内 直彦 [1*], 力石 嘉人 [1]
Naohiko Ohkouchi[1*], Yoshito Chikaraishi[1]

[1] 海洋研究開発機構
[1]JAMSTEC

A method for precise estimation of trophic position was recently developed using analysis of the nitrogen isotopic composition of amino acids (McClelland and Montoya, 2002; Chikaraishi et al., 2009). This method is based on the empirical observations that difference in the d15N values of glutamic acid and phenylalanine in a given organism is a simple function of trophic position of the organism. The method has an advantage over the commonly used bulk isotope method in that it is not influenced by the temporal variations in d15N value of primary producer or substrate. The method has been proven useful for estimating the food sources of both aquatic and terrestrial organisms (Popp et al., 2007; Chikaraishi et al., 2009, 2010; Styring et al., 2010). Because isotopic relationship among amino acids is different between aquatic and terrestrial organisms, diets of omnivores like human cannot be uniquely solved even in this methodology.

Nevertheless, we have applied the nitrogen isotopic analysis of amino acids to the modern human nail. Our results suggested that diets of modern human are much less relied on marine organisms relative to coastal ancient human, as expected (Naito et al., 2012). Reflecting denitrification in the modern over-fertilized soil, phenylalanine from modern human is somewhat enriched in 15N relative to that from ancient human (Naito et al., 2010). We are currently measuring terrestrial protein source of modern human diet (e.g., beef, chicken, pork, etc.) for better constraining the interpretation of the isotopic signature. Among modern human, phenylalanine from modern Japanese is somewhat depleted in 15N while glutamic acid is enriched in 15N relative to European people on average, reflecting more fish in their diets. In this presentation, I will overview the analytical results of modern human nail and try to nail down the human energy source from the natural energy flow.

キーワード: 人類, 食性, アミノ酸, 窒素同位体比
Keywords: Human, Diet, Amino acid, Nitrogen isotopic composition