Spatiotemporal variations in n-alkane from the southern inner shelf sediment of the Korea: Implications for Holocene paleovegetation and climate change

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The spatial variation of δ13Corg, δ15N, and temporal variations of n-alkanes were investigated to evaluate the paleovegetation and climatic changes from the inner shelf of southern part of Korea. The δ13Corg values ranged from −25.86‰ to −20.26‰ (average = −21.47‰, n = 81), and δ15Norg values ranged from 4.37‰ to 8.57‰ (average = 6.72‰, n = 81). The contribution of the terrestrial fraction of organic matter to the total ranged from 4.4% to 97.7% (average = 24.4%, n = 81), suggesting higher amounts around the catchment area and lower amounts in the offshore area. The concentration of total n-alkanes (nC25 − nC35) was higher at the boundary between the outer bay and inner shelf break. Average chain length and the carbon preference index both indicated that major leaf wax n-alkanes accounted for the observed distribution of terrestrial organic matter, and were dominant in the inner shelf break and outer shelf break. Based on the spatial distribution of the total n-alkanes and the sum of nC27, nC29, and nC31, the terrestrial organic matter distribution was considered to be controlled by local oceanographic conditions. N-alkanes distribution in two cores (SJP15-2 and SJP15-4) shows coincident excursion with peak concentration around 2,400~2,500 yr. BP. Further, other indices of average chain length (ACL), and several ratio of each n-alkanes compound such as nC23/nC31, nC29/nC31 in both cores also breaking excursion at this year. The supply change from neighboring areas and its related paleoclimatic changes may link with this variation during the Holocene. In addition to enabling the distribution and source of terrestrial organic matter to be identified, the n-alkanes indicated that minor anthropogenic allochthonous organic materials were supplied into these areas.

Biography:
Sangmin Hyun has been researched on Marine Geological fields since he worked at Korea Institute of Ocean Science and Technology (KIOST) in 1997. Main research activities include 1) studying the paleoclimatology and paleoceanography by the GC/MS and biomarkers such as alkenones and n-alkane. In particular, he is interested in heavy metal pollution in coastal area.

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