



Paleoclimatic implications recorded in the late Pleistocene stalagmite, Eden Cave, Korea

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Textural and geochemical investigation was carried out to delineate the paleoclimatic variations from the late Pleistocene stalagmite of the Eden cave in Korea. Based on U-series age dating, the stalagmite started to grow from 537ka(BP) and the growth ceased at 96ka. The inside of the stalagmite can be divided into 5 units (A, B, C, D & E) according to the growth. Especially, Unit C shows the different texture compared to other units. This unit is characterized by fibrous and spherulitic calcite crystals with a minor contribution of fibrous aragonite, while the rest of the units is composed of columnar calcite. The Unit C in the Eden stalagmite show the enriched carbon and oxygen isotope values (15 and 5 per mil, respectively) that has the same bimodal pattern, significantly. This textural and isotopic difference indicates that the cave coral grew at this interval while the dripping water ceased to be supplied from the ceiling showing kinetic effects. However, as water started to drip again, the stalagmite continued to grow over the cave corals. Based on the frequency and density of growth laminae, the stalagmite shows three orders of cycles, and each cycle reflects various climatic changes with different periods of growth. Comparing with Marine Isotope Stage (MIS) based on the textural data, the stalagmite grew from MIS4 to MIS14, and the Unit C belongs to the MIS 8. Also, other glacial periods such as MIS 6 and MIS 10 are characterized by the change of growth axis within the stalagmite. This study suggests that the stalagmite of the Eden Cave contains significant textural information on several glacial periods in the past, and also suggests that a variety of paleoclimatic evidences can be revealed from the textural studies of speleothems.