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DOES HOMOCHIRALITY OF AMINO ACID PRESERVE ON THE SPACE DUST SURFACE AGAINST NON-POLARIZED VACUUM ULTRA VIOLET LIGHT IRRADIATION? ~ THE CASE OF ASPARTIC ACID ~

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The origin of biomolecular homochirality is not clear now. But some observations (J. R. Cronin and S. Pizzarello, 1997; J. Bailey *et al.*, 1998) and experiments (J. J. Flores *et al.*, 1977; Y. Kodama *et al.*, to be published.) suggest that circular polarized light (CPL) might trigger the enrichment of the chirality in space. However does the chirality preserve during decomposition of large amino acid to small amino acid (*e.g.* aspartic acid to alanine)? In this work, we examined preservation of chirality for solid amino acid modeled the space dust surface, Asp film, using a 146 nm non-polarized vacuum ultraviolet (VUV) light in vacuum. The quantum efficiencies between L- and D-amino acids were equal within error. L-Ala and β-Ala was observed from irradiated L-Asp films. But Gly was not observed. In the case of irradiated D-Asp films, D-Ala and β-Ala was observed and Gly was not observed. Therefore, we concluded that the chirality was preserved for the photodecomposition of Asp to Ala. Space might play important roles in the origin of homochirality and life. The key may be in space.

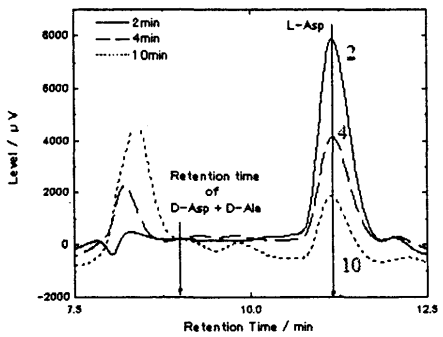

Fig.1
HPLC chromatograms of irradiated L-Asp films