

## UV/Vis lamp light affection to amino acids solution with hydroxyapatite

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[http://www.aist.go.jp/index\\_j.html](http://www.aist.go.jp/index_j.html)

Low molecular weight organic compounds, such as amino acids, which were generated by inorganic processes on and/or around the primitive earth conditions, might be existed on the primitive earth effecting from the high temperature, high energy UV light, or radio wave irradiation. These low molecular weight compounds might be became large molecular compounds during such primitive earth environment. These compounds including amino acids might be increased their molecular weights and variations through several chemical processing, which were proposed a lots of researchers but few reports the effects of the UV-Vis light irradiation to the amino acids.

In this study the affects were investigated of the UV-Vis lamp light irradiation to the amino acids solution with or without hydroxyapatite, HAp, which is one of the hydrothermal deposit mineral.

The test solutions were prepared by the amino acids standard solution (H-type, WAKO chem; 2.5 micromol/ml) with citric acid sodium buffer solution (pH 2.2, WAKO chem.) measured up to 100 ml. Part of the test solution was added the HAp powder (672 mg) and the other solution added the HAp powder without amino acids standard solution. These solutions put into Pyrex beakers and stired during UV-Vis lamp light irradiation. The lamp located at 600 mm from the beakers and adjusted 400 W in the total power. The test solutions were inspected at just before light irradiation, 2nd, 4th, 7th, 9th, and 11th days. The sampling solutions were analyzed by the amino acids analyzer (Shimadz Co. Ltd.). The precipitated samples including powders were separated to an upper solutions and powder compounds which were dried by vacuum dryer at room temperature and resolved with a hydrochloric acid solution. The resolved powder samples were filtering again and analyzed.

The upper solution of the amino acids standard with HAp powder showed their amino acids concentrations were increased, excepting CYS, from 0.025 to 0.035 micromol/ml on average. From the precipitation of the amino acids standard with HAp powder the several amino acids were also detected but their concentrations were quite low, such as 0.005 micromol/ml on average. On the case of without HAp powder amino acids solution, the included amino acids concentrations were increased, excepting CYS, MET, and TYR. On the other hand, the HAp powder only mixed in the citric acid buffer solution, there were few organic compounds detected. These results might be indicated that the amino acids compounds were generated by UV-Vis light energy and also HAp powder effects, but HAp powder itself had few ability to generate amino acids compounds.