

陸棲藍藻 *Nostoc* sp. HK-01 の乾燥藻体の乾熱耐性に関わる機能分子 Low molecular-weight compounds contributing to the dry heat tolerance of the terrestrial cyanobacterium *Nostoc* sp. HK-01

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Terrestrial cyanobacteria are useful for enabling bio-chemical circulation in closed bio-ecosystems, which is achieved owing to their photosynthetic and nitrogen fixing ability, utility as a food, and tolerance to harsh environments. Dried colonies of the terrestrial cyanobacterium *Nostoc* sp. HK-01 have a high tolerance to vacuum, UV, gamma-rays, heavy particle beams, and extreme temperatures. Tolerance to extraterrestrial environments is important for transportation to Mars. *Nostoc* sp. HK-01 has several different types of cells in its life cycle. The akinete (dormant cell) cell type of in *Nostoc* sp. HK-01 shows tolerance to dry heat. Some functional substances which provide tolerance against heat exist in the akinete cells. In this study, we investigated a property of low molecular weight compounds, which are accumulated in the akinetes of *Nostoc* sp. HK-01, to prevent protein aggregation after heating. The results of our study suggest that the compounds function as a compatible solute, which contributes to the dry heat tolerance of the akinetes of *Nostoc* sp. HK-01. The detailed mechanisms of action of the identified substances would be investigated in future studies.

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