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Dry heat tolerance of the dry colony in *Nostoc* sp. HK-01 for useful usage in closed bio-ecosystems

KIMURA, Shunta[1*] ; KATOH, Hiroshi[2] ; SATO, Seigo[1] ; TOMITA-YOKOTANI, Kaori[1]

[1]University of Tsukuba, [2]Mie University

Closed bio-ecosystem as an artificial design requires the high flexibility and versatility system. As one of elements for all of introduced organisms, heat tolerance is important one such closed environment. *Nostoc* sp. HK-01 is one of terrestrial cyanobacterium having a high dry tolerance and it has several ability, photosynthesis, nitrogen fixation and usefulness as a food, it is thought that it can be used for bio-chemical circulation in a closed ecosystem, including space. Besides, a study on each tolerance predicted at the time of introduction to a closed bio-ecosystem is necessary. Therefore, as one of the tolerance that are intended to space environment, dry heat (100 ℃, 10 h) tolerance of dry colony in *Nostoc* sp. HK-01 has been investigated, but the detail function of them has not yet been elucidated. We focused on the extracellular polysaccharides (EPS) having the various tolerance, desiccation, low temperature, NaCl, and heavy particle beam. We will consider the function and useful usage of this cyanobacterum in closed bio-ecosysitems after the consideration of the results of contribution of the possibility that EPS improves dry heat tolerance under a dry condition.

Keywords: bio-chemical circulation, closed bio-ecosystem, cyanobacteria, dry heat tolerance, extracellular polysaccharides, *Nostoc* sp. HK-01