

Evaluation of food functions of a terrestrial cyanobacterium, *Nostoc* sp. HK-01 in closed bio-ecosystems

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We study life-support in closed bio-ecosystems to provide food and oxygen for habitation in severe environments. We propose several species of organisms as candidate species. A terrestrial cyanobacterium, *Nostoc* sp. HK-01 has several unique abilities, such as photosynthesis, nitrogen fixation and tolerance to an extraterrestrial environment. Here, we propose to utilize *Nostoc* sp. HK-01 as a food resource in extraterrestrial environments such as Mars. We indicate that *Nostoc* sp. HK-01 has food functions as primary(nutritional), secondary(sensory), tertiary(physiological). We will discuss the utilization as a food resource of *Nostoc* sp. HK-01 in closed bio-ecosystems. Our results may contribute to the supply of food resources under severe conditions for life-support in closed bio-ecosystems.

Keywords: closed bio-ecosystems, cyanobacteria, food resource, *Nostoc* sp.HK-01, food functions