

O12-11 : 紅色光合成細菌 *Rhodospseudomonas palustris* の非増殖細胞における代謝・転写プロファイルの特徴

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In natural environments, bacterial growth is often restricted by nutrient limitation. We reported that viability and ATP level of purple photosynthetic bacteria under starvation conditions were supported by illumination. To examine the change of physiological states of non-growing cells, we applied metabolomic and transcriptomic analysis to carbon-starved cells of *Rhodospseudomonas palustris*. During photoheterotrophic growth, cells entered non-growing state due to carbon depletion and then the non-growing cells were incubated in the light or dark for 5 days where no remarkable decrease in viability was observed. Many genes related to protein turnover were highly transcribed after 5 days of starvation in the light and no marked changes in the metabolite profile were observed. These results suggested that the non-growing cells maintained the cellular state by active turnover supported by light energy. Although biosynthesis in the dark cells seemed to be repressed by low energy as decreasing of high-energy components e.g. ATP and UTP, some amount of mRNA was observed and expression of inorganic-ion transporters was remarkable in the dark. In addition, amino acids profile was greatly changed in the dark. These results suggested that the non-growing *R. palustris* cells, even with low-level energy, probably maintained intracellular environment by limited protein biosynthesis.

keywords: Metabolome, Transcriptome, Survival, Non-growing cells, Purple photosynthetic bacteria