

・ 研究課題名

「Study on producing Bioplastic PHA utilizing BDF waste glycerol by *Halomonas* sp. KM-1」

・ 研究代表者名及び所属

Yoshikazu KAWATA, National Institute of Advanced Industrial Science and Technology (AIST)

Sahori TAKEDA, AIST

Norioki KAWASAKI, AIST

Atsuyoshi NAKAYAMA, AIST

Naoko YAMANO, AIST

・ 要旨

Biodiesel fuel (BDF) is becoming popular as a carbon-neutral fuel that can protect the environment from global warming. BDF is produced from oil and fat using mainly a methyl esterification process that employs methanol and alkali catalysis. This process generates a by-product, waste glycerol, produced at about 10 wt% from raw materials. This glycerol contains a high salt concentration and has a high pH. The problem of waste glycerol utilization must be addressed if BDF usage is to be enhanced. Some chemical treatments are available for the utilization of waste glycerol, but a purification process is required before glycerol can be used as a source for chemical refineries. Furthermore, if glycerol is to be used as a carbon source, biological trials using screening bacteria are required.

Poly(3-hydroxybutyrate) (PHB) production by bacteria was first reported in 1926, and its product, poly(3-hydroxyalkanoate) (PHA), has been commercially available since the 1990s. However, due to high production cost, mainly carbon source, PHA is not a popular plastic material. We isolated the alkalophilic and halophilic bacteria *Halomonas* sp. KM-1. This strain produced 14.9 g/L PHB and 30 g/L α -ketoglutarate in a simple medium and diluted waste glycerol.

keyword: waste material recycling, glycerol, biodiesel (BDF), bioplastic (PHA, PHB)