

# Cultured anaerobic bacteria in a tropical glacier and the glacier foreland in Uganda

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Stanley Plateau is a glacier that lies at an altitude of about 4,800 m on Rwenzori Mountains located under the equator in Uganda. It is rapidly retreating due to recent climate changes, and it is predicted to disappear by around 2020.

In this glacier, a unique ecosystem including *Ceratodon purpureus*, a moss, and other microorganisms has been reported. However, anaerobic bacteria have not been studied although their existence has been suggested by uncultured genetic analyses. In this study, we aimed to isolate anaerobic bacteria and reveal their properties from Stanley Plateau and the glacier foreland soil.

The collected samples were added to PY4S medium, peptone, yeast extract and 4 kinds of sugars (glucose, cellobiose, maltose and starch), in anaerobic atmosphere. After a month, the isolation of the strains was carried out by a roll tube method. The isolated strain was inoculated into an anaerobic PYG medium and cultured. The cultivation temperature was 15 °C.

Their genomic DNA were extracted by a cell disruption method and 16S rDNA was amplified by PCR. The PCR products were sequenced and homology searches were performed against the GenBank nucleotide sequence databases using the BLAST program available from the NCBI website.

As a result, we obtained 5 strains and their homology searches showed that 3 strains, ST4-1-1, TR9-1-1 and TR9-1-2 were similar to *Bacteroides xyloxyticus* (ST4-1-1:99.9%, TR9-1-1:98.3%, TR9-1-2:98.4%) and 2 strains, FG2-1-1 and FG2-1-2 were similar to *Clostridium amylolyticum* (FG2-1-1:93.2%, FG2-1-2:93.6%). FG2-1-1 and FG2-1-2 isolated from the glacier foreland soil were spore-forming Gram positive, bacilli, the cell size of which was 6.0 - 9.5 x 0.6 - 1.0 µm. The growth temperature was within the range of 5 to 20 °C, and the optimum was 15 °C. Growth pH range was pH 4.0 to pH 9.0, and the optimum was pH7.5. The phenotype and physical properties of FG2-1-1 and FG2-1-2 were apparently different from *Clostridium amylolyticum* and thus the strains would be a novel species of the genus *Clostridium*.

## References

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