Accepted Manuscript

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PII: S0023-6438(18)30213-5

DOI: 10.1016/j.lwt.2018.02.072

Reference: YFSTL 6927

To appear in: *LWT - Food Science and Technology*

Received Date: 14 December 2017

Revised Date: 22 February 2018

Accepted Date: 28 February 2018

Please cite this article as: Parlindungan, E., Dekiwadia, C., Tran, K.T.M., Jones, O.A.H., May, B.K., Morphological and ultrastructural changes in *Lactobacillus plantarum* B21 as an indicator of nutrient stress, *LWT - Food Science and Technology* (2018), doi: 10.1016/j.lwt.2018.02.072.

Morphological and ultrastructural changes in *Lactobacillus plantarum* B21 as an indicator of nutrient stress

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Abstract

This study investigated the effect of nutrient stress on cell viability and growth, bacteriocin activity, acid production, morphology and ultrastructure of *Lactobacillus plantarum* B21. The aim was to ascertain if this species' viability in food applications could potentially be controlled/improved by initial culture conditions. Both glucose and Tween 80 were found to have statistically significant effects on cell viability, as well as pH and bacteriocin production. Scanning and transmission electron microscopy revealed that nutrient availability