

### Antimicrobial potential of *L. reuteri* cell-free supernatant- New Zealand blend honey

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#### Abstract

Honey has long been recognised as an effective antimicrobial agent for both topical and oral treatments. Among the available floral honeys, Manuka honey is a more effective antimicrobial agent due to its unique bioactive compounds, which includes methylglyoxal (MGO), a non-peroxide phytochemical substitute. However, Manuka honey and its related products are relatively expensive. Therefore, more affordable honey products with effective antimicrobial activity are needed. In this study, a commercial New Zealand blend honey was combined with a fermented cell-free supernatant of the probiotic bacterium, *Lactobacillus reuteri* DPC16 (*L. reuteri* cell-free supernatant-blend honey, LRS-BH) to determine its overall antimicrobial activity against *Escherichia coli* NCTC8196 and *Staphylococcus aureus* NCTC4163. Determination of antimicrobial activity was conducted using the 96-well microtiter plate method with Manuka honey (UMF 5+) used as a positive control. The minimum inhibitory concentration (MIC) of LRS-BH against *E.coli* was 1:9, resulting in an inhibition of 18%. The MIC of LRS-BH for *S. aureus* was 1:0.5, resulting in an inhibition of 45%. Of the different LRS-BH solutions tested, the maximum level of growth inhibition of *E. coli* was 36% (1:0.5), and 51% for *S. aureus* (1:9). The results indicate that the LRS-BH showed higher antimicrobial efficacy compared to Manuka honey (UMF 5+), which resulted in 17% and 43% inhibition against *E. coli* and *S. aureus*, respectively. Thus, the results demonstrate the antimicrobial potential of LRS-BH for controlling the growth of pathogenic bacteria.

#### Biography

Dr Tony Mutukumira gained his Ph. D. at the Norwegian University of Life Sciences in Norway, As, investigating lactic acid dairy fermentations. His current research includes food fermentations with emphasis on the development of functional foods. He has particular interest in food preservation using emerging technologies such as HPP and microwave. Tony is also passionate about using natural food preservatives. Tony is a scientific reviewer to several international peer-reviewed journals which include the International Journal of Food Microbiology, Food Science and Technology International, Journal of Natural and Mathematical Sciences, and Food Pathogens and Diseases. He is a member several professional organisations including the NZIFST, SAAFoST, SASDST, and IUFOST Committee on Distance Education. Tony is the present Secretary of the Food Safety Working Group of the International Commission of Agricultural and Biosystems Engineering (CIGR). He has published more than 70 papers in scientific journals.