

Evaluating the potential of the Malaysian Borneo Sarawak Acacia mangium Honey and Australian Honey as prebiotic towards mixed culture probiotics of Bifidobacteria animalis and Lactobacillus acidophilus

ABSTRACT

Honey is an ancient food that is preferable as a health supplement. It contains oligosaccharides which made it an interesting candidate as a putative prebiotic. Hence, this study aims to evaluate the potential of Malaysian Borneo Sarawak Acacia mangium honey as a prebiotic source for the mixed culture of probiotics (Microflora of large intestines); Bifidobacteria animalis, and Lactobacillus acidophilus in an in vitro fermentation system. The outcome was compared with the Multiflora Australian honey and glucose, thus, to determine the potential of Acacia mangium honey oligosaccharides as a prebiotic in both extracted and non-extracted substrates. The mixed culture was able to grow on MRS agar by feeding the extracted oligosaccharides from the honey. Both non-extracted honeys resulted a significant bacterial count (CFU/mL) compared to the extracted samples. The non-extracted substrate showed higher spectrophotometer absorbance for in vitro fermentation of 24 h compared to the extracted substrate. Acacia mangium honey obtained 0.6418 Abs_{600nm}, whilst Australian honey was found to be 0.7746 Abs_{600nm} and glucose, 0.331 Abs_{600nm}. The enumeration of probiotics showed that all samples tested significantly increased bacterial count (CFU/mL) at 24 h fermentation period. Acacia mangium honey acquired 900 CFU/mL. However, the Australian honey achieved 2605 CFU/mL. The extract (oligosaccharides) of Acacia mangium honey (445 CFU/mL) contributes to a higher bacterial count than glucose (410 CFU/mL), yet no significant difference from Australian honey extract (448 CFU/mL). Thus, Acacia mangium honey has the potential to be prebiotic for mixed cultures of Bifidobacteria animalis and Lactobacillus acidophilus.

Keyword: Honey; Oligosaccharide; Prebiotic; Probiotic; Acacia mangium