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Comparison of physiochemical properties of Sri Lankan wild bee honey with New Zealand manuka honey

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Sri Lankan bee honey has a lower market value compared to manuka honey which is accepted worldwide as a medicinal honey. The medicinal properties of honey mainly depends on their physiochemical properties. The present study was undertaken to compare physiochemical parameters of bee honey samples collected from different regions (Ella, Gampaha, Elpitiya, Loggaloya, Nuwara Eliya, Anuradhapura, Haputhale, Kothmale, and Welimada) of Sri Lanka with manuka honey sample from New Zealand. Total soluble solids, pH, free acidity, moisture, specific gravity, and 5-hydroxymethylfurfural contents were determined as physiochemical properties. One-way ANOVA revealed that moisture, total soluble solids, specific gravity, and 5-hydroxymethylfurfural contents of all analyzed wild bee honey samples and manuka honey were significantly different ($p < 0.05$). Studied bee honey samples had acidic pH ranged from 3.96 ± 0.00 to 4.99 ± 0.00. The pH values of bee honey samples from Elpitiya, Haputhale, Nuwara Eliya and manuka honey were not significantly different ($p > 0.05$). Mean values of free acidity observed for all samples were in concordance with the maximum limit establish by CODEX standards for honey (50 meq/kg), except for the samples from Ella, Gampaha, and Loggaloya. Free acidity values of samples from Haputhale and Nuwara Eliya and manuka honey were not significantly different ($p > 0.05$). Manuka honey had significantly lower moisture content (%) (17.00 ± 0.00) than Sri Lankan bee honey. The mean moisture content (%) of all analyzed samples from Sri Lanka were ranged from 18.33 ± 0.31 to 20.00 ± 0.00 and was in concordance with the maximum limit set by CODEX (20%). The total soluble solids values obtained in the present study were varied between 77.37% and 80.26%, which suggests that the samples were most likely unadulterated. Manuka honey had significantly higher specific gravity (1.43 ± 0.00) than Sri Lankan bee honey. All the Sri Lankan bee honey samples had acceptable level of specific gravity at 27^{o}C (i.e., >1.35). Manuka honey had a 5-hydroxymethylfurfural content (91.52 ± 2.70) higher than the maximum acceptable level for European region (40 mg/kg) set by CODEX. Bee honey samples from Kothmale, Gampaha, Loggaloya, and Elpitiya had 5-hydroxymethylfurfural content below the maximum acceptable level for tropical countries (80 mg/kg) established by CODEX. Results revealed that bee honey samples obtained from Kothmale and Elpitiya showed the best quality in all physiochemical parameters and genuine bee honey obtained from these areas have a potential to be sold at high prices as Manuka honey.

Keywords: Sri Lankan bee honey, Manuka honey, Physiochemical properties

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