

Antioxidant and Anti-diabetic Properties of Aqueous Methanol Extraction of *Nephelium mutabile* (Pulasan) Leaves †

Shabitaah Kurup Sasikumar ^{1,*}, Kokila Thiagarajah ¹, Norliza Shah Jehan Muttiah ¹

¹ Department of Allied Health Science, Faculty of Science, Universiti Tunku Abdul Rahman (UTAR), Kampar, Perak – 31900, Malaysia

* Correspondence: shabitaah@gmail.com;

† Presented at International e-Conference on Bioengineering for Health and Environment (ICBHE 2020)

Received: 5.07.2020; Revised: 10.07.2020; Accepted: 12.07.2020; Published: 15.07.2020

Abstract: *Nephelium mutabile* is a tropical plant of *Sapindaceae* family which originated from the Malay Peninsula and used in traditional medicine. This study focused on investigating the antioxidant and anti-diabetic properties of *Nephelium mutabile* leaves. The aqueous methanol (80%) crude extract of *Nephelium mutabile* leaves were fractionated via gravity column chromatography and thin-layer chromatography. A total of 17 fractions were obtained from column chromatography and subsequently pooled together to yield eight fractions. The pooled fractions were examined for their antioxidant properties via DPPH assay, Folin-Ciocalteu assay, and aluminum chloride colorimetric assay and tested for anti-diabetic properties using alpha-amylase and alpha-glucosidase inhibitory assay. DPPH assay showed that fraction 8 has the highest free radical scavenging activity (EC₅₀ = 88.0 µg/mL) followed by fraction 7 (EC₅₀ = 225.0 µg/mL). Fraction 8 showed the highest total phenolic and flavonoid content (221.1 µg GAE/mg, 222.4 µg QE/mg) respectively followed by fraction 7 (166.5 µg GAE/mg, 213.9 µg QE/mg) respectively. The most potent alpha-amylase inhibitory activity is observed in fraction 8 with an IC₅₀ value of (41.0 µg/mL) followed by fraction 7 (90.6 µg/mL). In the alpha-glucosidase inhibitory activity, fraction 8 with IC₅₀ value 160.0 µg/mL followed by fraction 7 with IC₅₀ value 50.6 µg/mL showed the best inhibition activity. In conclusion, *Nephelium mutabile* leaves showed potential antioxidant, and anti-diabetic properties and fractions 8 and 7 should be the focus of future studies.

Keywords: *Nephelium mutabile*; aqueous methanol; chromatography; antioxidant; antidiabetic.

© 2020 by the authors. This article is an open-access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

Funding

This research received no external funding.

Acknowledgments

Universiti Tunku Abdul Rahman (UTAR).

Conflicts of Interest

The authors declare no conflict of interest.