

Abstract

Clitorin and manghaslin from *Carica papaya* leaf juice: characterisation and antioxidant properties

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† Presented at 9th International Electronic Conference on Medicinal Chemistry, e-conference, 1–30 November 2023.

Abstract: Like other plant parts, leaves of *Carica papaya* L. (belongs to family Caricaceae) have a high content of phytochemicals that not only have beneficial food nutritional values but also medicinal potential such as against dengue. In this study, two flavoniods (clitorin and manghaslin) from *C. papaya* leaf juice were characterised and their antioxidant profiles were evaluated via two different free radical scavenging assays. The leaf juice was subjected to sequential chromatography techniques, including liquid-liquid extraction and centrifugal partition chromatography to isolate targeted compounds, clitorin and manghaslin. The separation work was monitored by high performance thin layer chromatography and characterised using ultra-high performance liquid chromatography-mass spectrometry. The retention factor for clitorin was determined to be 0.24, whereas for manghaslin it was 0.19. Chromatographic analysis using Orbitrap LC-MS in negative mode detected clitorin at m/z 739.35 [M-H]⁻ (rt 2.43 min) and manghaslin at m/z 755.46 [M-H]⁻ (rt 2.37 min). Utilising the Quest GraphTM IC₅₀ Calculator, the values for the 50% inhibition of free radical scavenging activity (IC₅₀) were extrapolated. In both antioxidant assays, manghaslin (DPPH: IC₅₀ = 1.31 ppm; ABTS: IC₅₀ = 9.54 ppm) is a better antioxidant compared to clitorin (91.96 ppm and 250.45 ppm). Positive control ascorbic acid exhibits 4.51 ppm in the DPPH assay and 2.93 ppm in the ABTS assay. The manghaslin consists of quercetin aglycone, with extra hydroxyl group shows at least 7 times higher antioxidant activity than the clitorin. Measuring the antioxidant activity of a substance is of paramount importance, not solely to ascertain the quality of functional foods, but also significantly to determine the pertinence of the antioxidant property in the prevention and/or treatment of oxidative stress-related ailments. Therefore, other type

of antioxidant assay such as lipid peroxidation shall be explored. Bioactivity associated with the difference of their antioxidant activities shall be studied as well.

Keywords: *Carica papaya*; leaf; juice; phenolic; flavonoid; flavonol; clitorin; manghaslin; antioxidant; dengue