Assessment of *In vitro* antioxidant, antibacterial and immune activation potentials of aqueous and ethanol extracts of *Phyllanthus niruri*

Zahra A Amin, Mahmood A Abdulla, Hapipah M Ali, Mohammed A Alshawsh and Suhailah W Qadir

Abstract

BACKGROUND: Recently much attention has been paid to biologically active plants because of their low production cost and fewer adverse effects compared with chemical drugs. In the present investigation the bioactivity of *Phyllanthus niruri* ethanol and aqueous extracts was evaluated *in vitro*.

RESULTS: The ethanol extract of *P. niruri* showed a high level of flavonoid content (123.9 ± 0.002 mg g⁻¹), while the aqueous extract showed the highest 2,2-diphenyl-1-picrylhydrazyl (DPPH; IC₅₀ 6.85 ± 1.80 μmol L⁻¹) and 2,2'-azino-bis(3-ethylbenzothiazoline-6-sulfonic acid) (ABTS; 46.44 ± 0.53 μmol L⁻¹) free radical scavenging activities with high phenol content (376 ± 0.02 mg g⁻¹) and elevated levels of ferric reducing antioxidant power (FRAP; 23 883 ± 0.019 mmol g⁻¹) with excellent antibacterial activity against *Staphylococcus aureus* (20 mm inhibition zone) and *Streptococcus agalactiae* (12 mm inhibition zone), respectively, in addition to the best immune activation potential of human peripheral blood mononuclear cells (450.5%).

CONCLUSIONS: It is clear from our results that both extracts of *P. niruri* has excellent bioactivity roles via elevated levels of antibacterial, antioxidant and percentage of peripheral blood mononuclear cell proliferation, which could lead to the development of medications for clinical use.