

Profiling, Antibacterial and Antioxidant Activity of *Acacia decurrens* (Willd) an Invasive South Africa Tree

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Abstract : The present study describes the chemical profile and antioxidant potential of the stem bark of *Acacia decurrens*. The methanol fraction of *A. decurrens* stem bark gave the highest yield (20 %), while the hexane fraction had the lowest yield (0.2 %). The GC-MS spectra of the hexane, chloroform and ethyl acetate fractions confirm the presence of fifty two major compounds and the ICP-OES analysis of the stem bark was found to contain Co(0.41), Zn(1.75), Mn(3.69), Ca(8.67), Ni(10.54), Mg(12.98), Cr(24.38), K(47.88), Fe(154.62) ppm; which is an indication of hyper-accumulation capacity. The UV-Visible spectra of showed four absorption maxima for hexane fraction at 665 (0.028), 410 (0.116), 335 (0.278) and 250 (0.007) nm, three for chloroform fraction at 665 (0.028), 335 (0.278) and 250 (0.007) nm, three for ethyl acetate fraction at 665 (0.070), 390 (0.648) and 345 (0.663) nm and three for methanol fraction at 385 (0.508), 310 (0.886) and 295 (0.899) nm respectively. Quantitative phytochemical screening indicated that the alkaloid (0.6-3.3) % and saponins (5.1-8.6) % contents of the various fractions were significantly lower than the tannin (30.9-55.8) mg TAE/g, steroid(13.92-41.2) %, phenol (40.6-65.5) mgGAE/g and flavonoids (210.2 -284.9) mg RUE/g contents. The antioxidant activity of the fractions was analysed by different methods and revealed good to moderate antioxidant potential with different IC₅₀ values viz. (42.2-49.6) mg/mL for ABTS and (37.8-75.0) µg/ml for DPPH respectively, compared to standard antioxidants. Based on obtained results, the *A. decurrens* stem bark fractions can be a source of safe, sustainable natural antioxidant drug and can be exploited as a source of controlled green-heavy metal cleaner.

Keywords : *Acacia decurrens*, antioxidant, DPPH, ABTS, hyperaccumulation, Menstruum, ICP-OES, GC-MS, UV/visible

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