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## Assessment of Free radical scavenging and digestive enzyme inhibitory activities of extract, fractions and isolated compounds from *Tetracera macrophylla* leaves

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### Abstract

*Tetracera macrophylla* is a valuable medicinal plant used traditionally for the treatment of various ailments. The crude ethanol extract was analyzed for its total phenolic and flavonoid contents. 2, 2-diphenyl-1-picrylhydrazyl (DPPH) and 2,2'-azinobis-3-ethylbenzothiazine-6-sulfonic acid (ABTS) were used to examine the free radical scavenging capacity while enzyme inhibitory activity was assessed using alpha-amylase and alpha-glucosidase inhibitory methods. The crude extract was found to be rich in both phenolic and flavonoid contents (417.90 and 5.86 µg GAE and QUE/mg dry weight, respectively) thus exhibited good radical scavenging activity on DPPH and ABTS radicals (IC<sub>50</sub> values of 16.2 and 14.65 µg/mL, respectively). It also showed a promising concentration dependent enzymes inhibitory activity against alpha-amylase and alpha-glucosidase with IC<sub>50</sub> of 72.17 and 76.16 µg/mL, respectively. Fractionation of active ethanol extract of *T. macrophylla* leaves through liquid-liquid partitioning yielded fractions Fa, Fb, Fc, and Fd. Among all the fractions, Fb (ethyl acetate fraction) showed the highest phenolic and flavonoid contents (206.34 µg GAE and 4.01 µg QUE respectively) and was also found to exhibit highest antioxidant and alpha-glucosidase inhibitory activities. The most active fraction, Fb upon purification yielded five compounds which were characterized and identified through different spectroscopic techniques. FTQ-4 among the compounds exhibited the strongest free radical and enzyme inhibitory activities followed by FTQ-3. All the compounds were isolated from this plant for the first time and found active against free radicals and/or digestive enzymes. These results further suggest the medicinal potential of *T. macrophylla* leaves as a therapeutic agent against hyperglycemia and free radical associated problems.

### Keywords

**Author Keywords:** *Tetracera macrophylla*; DPPH; ABTS; alpha-glucosidase; alpha-amylase; Active principles

**KeyWords Plus:** ALPHA-AMYLASE; ANTIOXIDANT ACTIVITY; IN-VITRO; LEAF EXTRACT; SCANDENS L.; GLUCOSIDASE; PLANTS; FLAVONOIDS

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