## Phytochemistry and biological activities of new secondary metabolites from the leaves of *Vitex grandifolia*

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## Abstract

**Background**: Compared with global vegetables such as tomato and cabbage, many local or indigenous vegetables are characterized by a high nutritional quality. Traditional and neglected vegetables such as *Vitex grandifolia*, may be a source of essential vitamins, micronutrients, protein and other phytonutrients, have the ability to play a significant role in strategies for achieving dietary protection. *V. grandifolia*, although popular for its ethnomedicinal uses, is a classified as neglected and wild vegetable. ts bark has been used to relieve stomach ache and to manage diarrhea, bronchial symptoms, rickets, sore and fever. Alcoholic drinks are made from its fruits, but they are also edible.

**Method**: Ten compounds (Three new and seven known ones) were isolated from *V. grandifolia* plant employing various chromatographic techniques i.e. Vacuum Layer (VL), Preparative Thin Layer (PTL) and Column Chromatographic techniques. Structures of the compounds were elucidated by spectroscopic data analyses including UV-visible, FT-IR, 1D and 2D NMR and HRESIMS. Schrodinger software was used for docking and different bioassays were employed through in vitro laboratory techniques.

**Result**: Methanol extract of the leaves of *V. grandifolia* afforded ten compounds including three new ones: grandifolic A, agnuside, bartsioside, isovitexin, vitexoside 1, grandifoside A, isoorientin, p-coumaric acid, orientin and vitexin. The inhibition of MAO B by Vitexoside 1 a new iridiod isolated from *V. grandifolia* and agnuside was 11-fold more potent ( $1C_{50}$  (µg/mL) of 9.04 and 9.08) compared to the inhibition of MAO A ( $1C_{50}$  (µg/mL) of >100). Vitexoside 1 exhibited the highest activity against Skin melanoma cell line with IC<sub>50</sub> (µg/mL) of 6.0. Isoorientin and orientin gave good antioxidant activity with IC<sub>50</sub> (µg/mL) of 33 and 41 which were better than the positive control used.

**Conclusion**: This study provided insight into the phytochemical profiles and pharmacological importance of *V. grandifolia* beyond basic nutritional values. It is recommended that this vegetable could play protective role against diseases after thorough clinical examination of the isolates from the plants.

Keywords: Phytochemistry; V. grandifolia; MAO A & B; wild vegetable; NMR