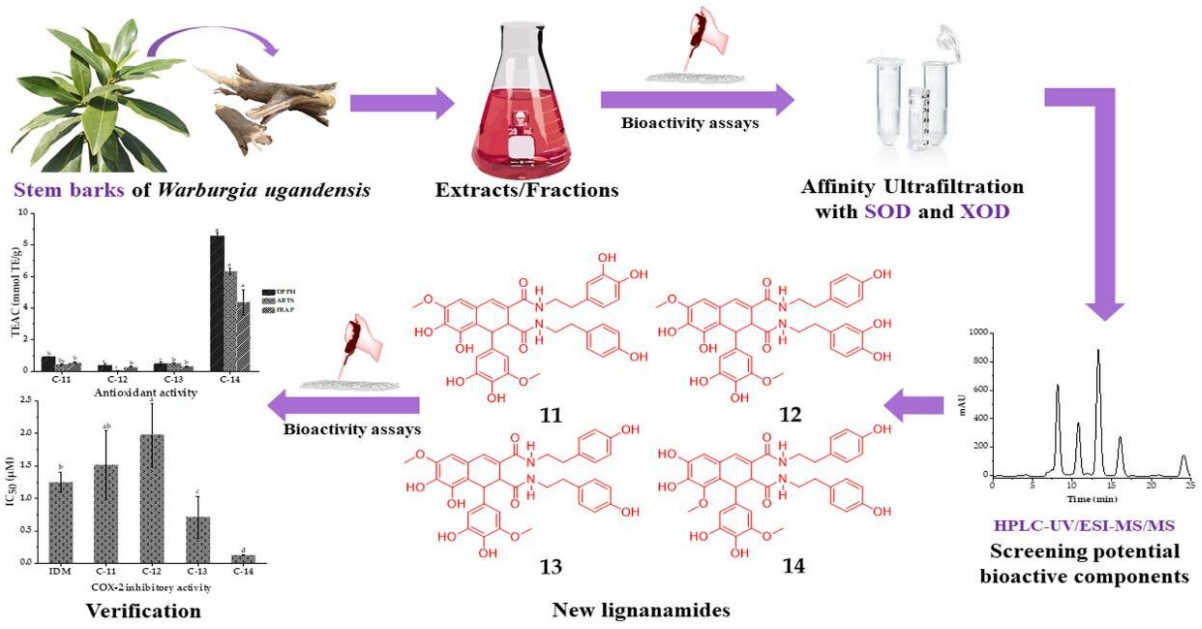
Researchers isolate new lignanamides with antioxidant and anti-inflammatory activities from W. ugandensis

May 19 2021, by Chen Na



Combination of affinity ultrafiltration LC-MS with SOD and XOD enzymes to quickly screen out and identify new lignanamides from Warburgia ugandensis with antioxidant and anti-inflammatory activities. Credit: ZHUANG Xiaocui

Warburgia ugandensis, a kind of evergreen tree with a distinctive aromatic smell belonging to the Canellaceae family, is mainly distributed in Eastern and Southern Africa, with a few in India. As a well-known

traditional medicinal plant in local communities in Africa, this species has long been widely used for treatment of various diseases.

Up to now, reports have showed that sesquiterpenoids isolated from W. ugandensis displayed antioxidant and anti-inflammatory activities. However, the potential bioactive components with noteworthy antioxidant and anti-inflammatory activity in W. ugandensis and its correlated mechanisms have not been explored.

Under the guidance of Prof. Guo Mingquan, Ph.D student Zhuang Xiaocui from Wuhan Botanical Garden preliminarily screened the antioxidant capacity of different solvent extracts from the stem barks of W. ugandensis using 1,1-diphenyl-2-picrylhydrazyl (DPPH), 2,2' -azinobis-(3-ethyl-benzthiazoline)-6-sulfonic acid (ABTS) radical scavenging and ferric ion reducing antioxidant power (FRAP) assays.

Then, nine potential superoxide dismutase (SOD) ligands and 12 potential xanthine oxidase (XOD) ligands were quickly identified from W. ugandensis by using SOD and XOD affinity ultrafiltration (UF) combined with high performance liquid chromatography coupled to mass spectrometry (LC-MS/MS).

Eight compounds (including four new lignan amides, one new macrocyclic glycoside, and three known compounds) were isolated and identified from W. ugandensis. The structures of those new compounds were identified by NMR (Nuclear Magnetic Resonance spectroscopy) and ultra-performance liquid chromatography quadrupole time of flight mass spectrometry (UPLC-QTOF-MS/MS). Finally, the antioxidant and anti-inflammatory activities of these compounds were determined to further validate the results of UF-LC-MS/MS.

In this study, the representative bioactive constituents of W. ugandensis with significant antioxidant and anti-inflammatory activities were

described comprehensively for the first time, which provided valuable information for the further application of W. ugandensis as potential natural antioxidant and anti-inflammatory agents in the near future.

The study, titled "New Lignanamides with Antioxidant and Anti-inflammatory Activities Screened Out and Identified from Warburgia ugandensis Combining Affinity Ultrafiltration LC-MS with SOD and XOD Enzymes," is published in *Antioxidants*.

More information: Xiao-Cui Zhuang et al, New Lignanamides with Antioxidant and Anti-Inflammatory Activities Screened Out and Identified from Warburgia ugandensis Combining Affinity Ultrafiltration LC-MS with SOD and XOD Enzymes, *Antioxidants* (2021). DOI: 10.3390/antiox10030370

Provided by Chinese Academy of Sciences