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## Hepatoprotective Constituents from MeOH extract of Seeds of *Combretum quadrangulare*

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*Combretum* species (Combretaceae) are widely used as folk medicine for treatment of hepatitis, malaria, respiratory infection and even cancer in different parts of Asia and Africa. *C. quadrangulare* is a wildy grown tree indigenous to Southeast Asia and commonly known as Tram bau in Vietnam. The seeds, leaves and stem barks of this plant has been used in Vietnamese folk medicine as an antipyretic, antidysentric, and anthelmintic agents. In our continuous work on Vietnamese medicinal plants, we found that the methanolic extract of *C. quadrangulare* shows potent hepatoprotective activity against D-galactosamine (D-GalN)/tumor necrosis factor-alpha (TNF- $\alpha$ )-induced cell death in primary cultured mouse hepatocytes. Moreover, the MeOH extract also significantly lowered serum glutamic pyruvic transaminase (sGPT) level on D-GalN/lipopolysaccharide (LPS)-induced liver injury in mice. We thus examined the constituents of the MeOH extract and isolated twelve new and twenty-six known compounds from a H<sub>2</sub>O-soluble fraction of the MeOH extract.<sup>1-3)</sup> Their hepatoprotective activity was examined against D-GalN/TNF- $\alpha$ -induced cell death in primary cultured mouse hepatocytes, and lupane-type and ursane-type triterpene glucosides with two double-bonds, phenolic compounds and some lignans were found to contribute to the hepatoprotective activity of the H<sub>2</sub>O-soluble fraction.<sup>4)</sup> In addition, from a MeOH-soluble fraction of the MeOH extract of *C. quadrangulare*, which also exhibited significant hepatoprotective activity against D-GalN/TNF- $\alpha$ -induced cell death in primary cultured mouse hepatocytes, three new triterpenes along with fifteen known compounds were isolated. The structures of the new compounds were established, by spectroscopic techniques including 2D-NMR methods, to be two lupane- and an oleanane-type triterpenes. The structures of these and other compounds isolated from the MeOH-soluble fraction and their hepatoprotective activity also will be reported.

1) Adnyana I K., *et al.*, Quadranosides I-V, New Triterpene Glucosides from the Seeds of *Combretum quadrangulare*, *J. Nat. Prod.*, 63, 496-500 (2000). 2) Adnyana I K., *et al.*, Quadranosides VI-XI, Six New Triterpene Glucosides from the Seeds of *Combretum quadrangulare*, *Chem. Pharm. Bull.*, in press. 3) Adnyana I K., *et al.*, 1-O-Galloyl-6-O-(4-hydroxy-3,5-dimethoxy)benzoyl- $\beta$ -D-glucose, a New Hepatoprotective Constituent from *Combretum quadrangulare*, *Planta Med.*, submitted. 4) Adnyana I K., *et al.*, Hepatoprotective Constituents of the Seeds of *Combretum quadrangulare*, *Biol. Pharm. Bull.*, submitted.