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Trichiliasinenoids A-C, three novel 6, 7-secomexicanolide limonoids with a 7, 29-linkage from *Trichilia sinensis*

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Meliaceous limonoids, characteristic chemical markers of the Meliaceae family, are natural products with both fascinating structures and potential bioactivities that have attracted interest from both natural products chemists and synthetic chemists in the past half century. As part of a continuing search for structurally interesting and biologically important limonoids from the Meliaceae family, the leaves and twigs of *Trichilia sinensis* collected from Xishuangbanna, Yunnan province of China were investigated. *Trichilia sinensis* Benth, a shrub, is native to the south of China and Vietnam and it has traditional applications for the treatment of several diseases such as abdominal pain caused by *Ascaris lumbricoides*, chronic osteomyelitis, scabies and eczema in folk medicine. The three novel rearranged mexicanolide-type limonoids (Trichiliasinenoids A-C) with an unprecedented C-29-C-7 connecting carbon skeleton formed by migration of C-7 from C-6 to C-29 of a mexicanolide-type limonoid precursor were isolated from the leaves and twigs of *Trichilia sinensis*. Their structures were assigned by spectroscopic analysis and the absolute configurations were determined by X-ray crystallography and CD calculation. A possible biosynthetic pathway of Trichiliasinenoids A was also proposed. The three new limonoids were evaluated for their cytotoxic activity against human myeloid leukemia (HL-60), hepatocellular carcinoma (SMMC-7721), lung cancer (A-549), breast cancer (MCF-7) and colon cancer (SW480) cell lines by MTS assay. Trichiliasinenoid B showed cytotoxicity against HL-60 cells, SMMC-7721 with an IC_{50} value of 5.2 μ M and 30.6 μ M, respectively, whereas other limonoids were inactive and comparable to the cisplatin positive control (IC_{50} : 1.1–17.3 μ M).

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