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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 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* Bentv, a shrub, is native to the south of China and Vietnam, having traditional applications in 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 leukaemia (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 μM and 30.6 μM, respectively, whereas other limonoids were inactive and comparable to the cisplatin positive control (IC50: 1.1–17.3 μM).

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