

A組 藥物化學暨藥理學組

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Cytotoxic constituents from *Celastrus paniculatus* induce apoptosis and autophagy in breast cancer cells

Jing-Ru Weng^{a,*}, Ming-Hong Yen^b, Wei-Yu Lin^c

^aDepartment of Biological Science and Technology, China Medical University,

Taichung 404, Taiwan

^bSchool of Pharmacy, Kaohsiung Medical University, Kaohsiung 807, Taiwan

^cDepartment of Pharmacy, Kinmen Hospital, Kinmen 891, Taiwan

Celastrus paniculatus is a traditional medicinal plant with diverse pharmacological activities. To identify its bioactive constituents, we isolated three new β -dihydroagarofuranoid sesquiterpenes from the whole plant, of which the major constituent [(1 α ,2 α ,8 β ,9 β)-1,8-bis(acetyloxy)-2,9-bis(benzoyloxy)-14-hydroxy- β -dihydroagarofuran; compound **3**] was assessed for its antiproliferative activity. Compound **3** suppressed the viability of MCF-7 breast cancer cells with IC₅₀ of 17 \pm 1 μ M. This growth inhibition was, in part, attributable to apoptosis. Moreover, this drug treatment led to LC3B-II accumulation, indicative of autophagy. Western blot analysis revealed the ability of compound **3** to target a broad range of signaling effectors related to survival and cell cycle progression, including Akt, NF- κ B, p53, and MAP kinases. In addition, flow cytometry analysis indicates increased reactive oxygen species production in response to compound **3**. Taken together, these findings suggest a pleiotropic mode of mechanism that underlies the antiproliferative activity of compound **3** in MCF-7 breast cancer cells.