Antitumour Activities of Sesquiterpene Lactones from *Inula helenium* and *Inula japonica*

Yong Li[a,b], Zhi-Yu Ni[a], Meng-Chu Zhu[c], Mei Dong[a], Si-Ming Wang[c], Qing-Wen Shi[d,*], Man-Li Zhang[d], Yu-Fang Wang[d], Chang-hong Huo[d], Hiromasa Kiyota[e,*], and Bin Cong[a,*]

[a] Department of Forensic Medicine, Hebei Key Laboratory of Forensic Medicine, Hebei Medical University, Shijiazhuang, 050017, Hebei Province, China. E-mail: hbydcongbin@126.com

[b] Department of Thoracic, Fourth Hospital of Hebei Medical University, Shijiazhuang, 050011, Hebei Province, China

[c] Laboratory Medical Science, School of Medical Science and Laboratory Medicine, Jiangsu University, Zhenjing, 212013, Jiangsu Province, China

[d] Department of Medicinal Natural Product Chemistry, School of Pharmaceutical Sciences, Hebei Medical University, 361 Zhongshan East Road, Shijiazhuang, 050017, Hebei Province, China. E-mail: shiqingwen@hebmu.edu.cn

[e] Graduate School of Agricultural Science, Tohoku University, Aoba-ku, Sendai 981-8555, Japan. Fax: +81-22-717-8785. E-mail: kiyota@biochem.tohoku.ac.jp

* Authors for correspondence and reprint requests

Z. Naturforsch. **67 c**, 375–380 (2012); received March 22/December 27, 2011

Eight sesquiterpene lactones were isolated from the roots of *Inula helenium* and flowers of *I. japonica*. Among them, isoalantolactone (**3**) and santamarine (**6**) exhibited significant growth inhibitory activities against gynecologic cancer cell lines, while others weakly inhibited the growth of the cell lines (IC_{50} Ω 100 μM). In addition, **3** significantly inhibited the tumour growth of S180 tumour-bearing mice. Compounds **3** and **6** were not toxic to human embryonic lung fibroblast cells *in vitro*. These results demonstrated that the antitumour activities are closely related to the structures of the compounds, that is, an Ŭ-exomethylene-ɔ-lactone ring is necessary for these activities.

Key words: Inula sp., Sesquiterpenes, Antitumour Activity