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# Original article

## Chemical Constituents from *Kalanchoe hybrida* and their Cytotoxicity

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### ABSTRACT

**Objective** *Kalanchoe hybrida* (Crassulaceae) is naturalized throughout all the island of Taiwan, China. The preliminary bioassay-guided fractionation of the crude extract of *K. hybrida* exhibited that the chloroform and *n*-butanol fractions possessed potent cytotoxicity against MCF-7, NCI-H460, and SF-268 tumor cell lines at 50 µg/mL concentration. Therefore, *K. hybrida* was selected as a target and the chemical constituents from the chloroform and *n*-butanol fractions of the crude extracts of *K. hybrida* were identified. The potential constituents were examined for their cytotoxicity against the tumor cell lines. **Methods** A combination of conventional chromatographic techniques was performed on the crude extract of *K. hybrida*. The chemical structures of the purified constituents were identified on the basis of spectroscopic and spectrometric analysis. **Results** The purification results had led to the characterization of totally 37 compounds. The isolated compounds **1**, **2**, and **4-12** were examined for their cytotoxicity *in vitro*, and bufadienolides **4-8** and flavonol glycoside **11** displayed significant cytotoxicity towards all the tested tumor cell lines among these tested compounds. **Conclusion** The results indicated that these principles should be responsible for the bioactivity of corresponding partial fractions. The potential constituents could be further investigated to explore the new natural lead drugs.

### Key words

bufadienolide; Crassulaceae; cytotoxicity; flavonol glycoside; *Kalanchoe hybrida* (J. D. Hooker) Vilmorin

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### 1. Introduction

*Kalanchoe* genus is a widespread distributed ornamental and medicinal plant around the world. Among this genus, *K. pinnata*, *K. daigremontiana*, *K. gracilis*, and *K. hybrida* were reported to display

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