

Comparative study on antibacterial and cytotoxic properties of selected *Kalanchoe* species



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Abstract

Kalanchoe species belong to Crassulaceae family and are widely distributed in tropical and subtropical areas as well as commonly cultivated as household plants. Many of these species have valuable medicinal properties - anti-inflammatory, antibacterial, antiviral, antioxidant and anticancer. The main secondary compounds responsible for these effects of *Kalanchoe* plants are flavonoids and bufadienolides. In our study, we evaluated and compared the antimicrobial and cytotoxic activity of three *Kalanchoe* species – *K. daigremontiana* Raym.-Hamet & H. Perrier, *K. pinnata* (Lam.) Pers. and *K. blossfeldiana* Poelln. The water and ethanolic *Kalanchoe* extracts were prepared from fresh leaves of the species. The extracts were tested on a few bacteria stains (β -hemolytic *Streptococcus*, *Corynebacterium diptheriae*, *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Enterococcus hirae*, and *Escherichia coli*). In cytotoxicity assay in vitro, we used human cancer cell lines – cervical HeLa, breast MCF-7, ovarian SKOV-3, and melanoma A375. Evaluation of the antiproliferative effect of *Kalanchoe* extracts was done with Real-Time xCELLigence system which enables real-time monitoring of cell growth, viability and proliferation at every point of the experiment. Our results indicate that the strongest antibacterial effects had ethanol extract of *K. blossfeldiana* and *K. pinnata* on *S. aureus*, *S. epidermidis*, and *E. hirae*. The most potent cytotoxic activity we observed for *K. blossfeldiana* ethanol extract and *K. daigremontiana* water extract on HeLa and SKOV-3 cells. *Kalanchoe blossfeldiana* ethanol extract can be a valuable candidate in infectious and cancer treatment.

Biography:

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Speaker Publications:

1. “Real-time cell analysis system in cytotoxicity applications: Usefulness and comparison with tetrazolium salt assays”; Toxicology Reports/Volume 7
2. “Identification of Flavonoids and Bufadienolides and Cytotoxic Effects of *Kalanchoe daigremontiana* Extracts on Human Cancer Cell Lines”; Planta Medica /Volume 86/Issue 4
3. “Biological activities of leaf extracts from selected *Kalanchoe* species and their relationship with bufadienolides content”; Pharmaceutical Biology/Volume58/Issue 1
4. “Alpha-Hederin, the Active Saponin of *Nigella sativa*, as an Anticancer Agent Inducing Apoptosis in the SKOV-3 Cell Line”; Molecules/Volume 24/Issue 16
5. “*Kalanchoe blossfeldiana* Extract Induces Cell Cycle Arrest and Necrosis in Human Cervical Cancer Cells”; Pharmacognosy Magazine/ Volume 15/Issue 66

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