



## PHYTOCHEMICAL CHARACTERIZATION AND CYTOTOXIC EFFECT OF *Smallanthus sonchifolius* AQUEOUS EXTRACT

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### INTRODUCTION

*Smallanthus sonchifolius* (Asteraceae), commonly known as “yacón”, is a perennial plant of the Andes. Its roots are used as food either as processed products or “as is”. The leaves have shown cytotoxic (on cancer cells), antibacterial, antifungal, anti-inflammatory and antiparasitic. A tea prepared from the leaves is used for its antidiabetic properties in some countries such as Japan (Ulloa et al., 2017). The toxicity of this kind of infusions has not been determined and controversial studies have been carried out. In this respect, the aim of this work was to characterize its phytochemical composition and to evaluate the potential *in vitro* cytotoxic effect of an aqueous extract of *S. sonchifolius*.

### MATERIAL AND METHODS

The aqueous extract (AQ-Ex) of *S. sonchifolius* leaves was prepared in a similar way to that commonly used in popular medicine as tea bags. The sample (~2 g) was placed in a sterile gauze sachet, boiling water (100 ml) was added and left for 20 min at room temperature. This extract (AQ-Ex) was successively partitioned with CH<sub>2</sub>Cl<sub>2</sub> and ethyl acetate. AQ-Ex was freeze-dried, and the organic fractions were evaporated to dryness (CH<sub>2</sub>Cl<sub>2</sub>-Fr and EtOAc-Fr). The composition of AQ-Ex, CH<sub>2</sub>Cl<sub>2</sub>-Fr and EtOAc-Fr was analyzed by TLC and

HPLC-MS/MS. In order to evaluate the cytotoxicity of the AQ-Ex, the MTT assay was performed on CHOK1 and HepG2 cell lines in a range between 25–800 µg/mL.

### RESULTS

TLC analysis of the CH<sub>2</sub>Cl<sub>2</sub>-Fr and EtOAc-Fr showed the presence of the sesquiterpene lactones (STLs) enhydrin and the dimer enhydrofolin, and polyphenolic compounds, respectively. The presence of the STLs was confirmed by HPLC-MS/MS. AQ-Ex treated cell lines presented different responses; CHOK1 cell line exhibited a dose-dependent cytotoxic effect with a CC<sub>50</sub> of 144.5 µg/mL. Hepatic cell line (HepG2) showed that AQ-Ex was best tolerated in a wide doses range.

### CONCLUSIONS

AQ-Ex of *Smallanthus sonchifolius* contained STLs and polyphenolic compounds that have previously shown to be biological active. In relation to cytotoxicity, AQ-Ex exhibited a distinct behaviour which could be related to the differential metabolic capacity of the cell lines used.

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### REFERENCES

Ulloa J. et al., 2017, Parasit Vectors

