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A new method based on supercritical fluid extraction for polyacetylenes and polyenes from *Echinacea pallida* (Nutt.) Nutt. roots

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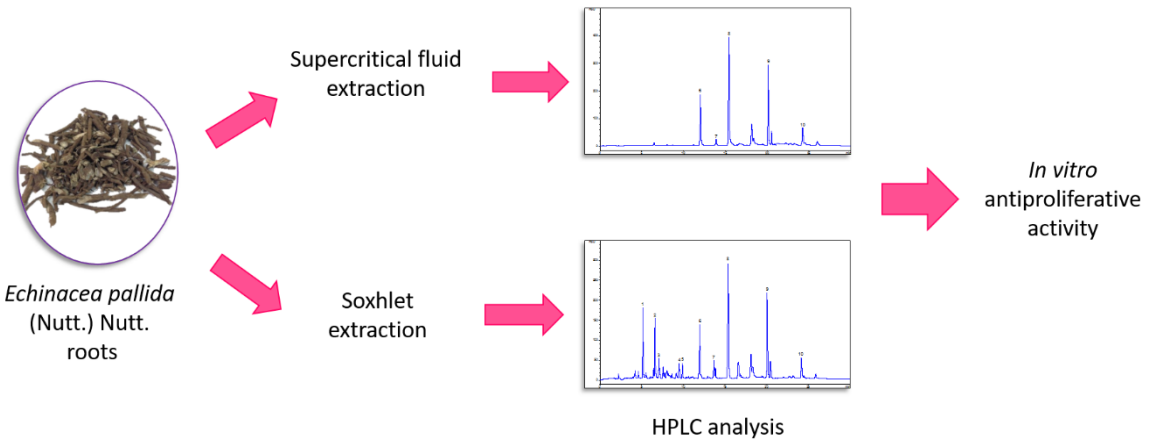
Graphical Abstract



Highlights

- Supercritical fluid extraction was applied to *Echinacea pallida* roots
- The extract composition was compared with that provided by Soxhlet extraction
- HPLC on a fused-core C_{18} column was used to monitor the extract composition
- The antiproliferative activity was tested against A549 and MCF-7 cancer cell lines
- An efficient green extraction was developed to provide bioactive extracts

Abstract

The genus *Echinacea* (Asteraceae) includes species traditionally used in phytotherapy. Among them, *Echinacea pallida* (Nutt.) Nutt. root extracts are characterized by a representative antiproliferative activity, due to the presence of acetylenic compounds.
In this study, supercritical fluid extraction (SFE) was applied and compared with conventional Soxhlet extraction (SE) in order to obtain a bioactive extract highly rich in polyacetylenes and polyenes from *E. pallida* roots. The composition of the extracts was monitored by means of HPLC-UV/DAD and ESI-MS^n by