

Inhibition of Caco-2 and HeLa proliferation by *Terminalia sericea* Burch. ex DC. (Combretaceae) leaf extracts and identification of volatile components

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Terminalia sericea Burch. ex. DC (Combretaceae) is used in traditional South African medicine to treat a wide variety of diseases. Several other *Terminalia* spp. have been reported to have anti-proliferative and apoptotic activities. Despite this, the anticancer properties of *T. sericea* remain to be rigorously tested. The current study was undertaken to test a panel of *T. sericea* leaf extracts for the ability to inhibit the proliferation of Caco-2 colorectal and HeLa cervical carcinoma cells, and to identify volatile compounds using GC-MS headspace analysis. Powdered *T. sericea* leaves were extracted with solvents of varying polarity and investigated for the ability to inhibit the proliferation of Caco-2 and cervical carcinoma cells using MTS based colorimetric cell proliferation assays. The extracts were tested for toxicity in the *Artemia nauplii* bioassay and the extract with the most potent anti-proliferative activity was examined using headspace GC-MS analysis to identify volatile nonpolar components. The *T. sericea* leaf extracts displayed potent anti-proliferative activity against Caco-2 and HeLa carcinoma cells. The methanolic extracts were particularly potent inhibitors of Caco-2 and HeLa proliferation.

The aqueous and ethyl acetate extracts (but not the chloroform or hexane extracts) also significantly inhibited carcinoma proliferation, albeit with substantially lower potency. Subsequent analysis of the *T. sericea* leaf extracts by GC-MS headspace analysis highlighted several interesting volatile compounds. All extracts were shown to be non-toxic in the *Artemia nauplii* bioassay. The lack of toxicity of these extracts and their anti-proliferative bioactivity against Caco-2 and HeLa carcinoma cells indicates their potential in the treatment of some cancers.

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The effects of herbicides on soil chemical and soil microbial characteristics of riparian fynbos ecosystems

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