

***In vitro* study and phytochemical profile of *Laportea decumana* (Roxb.) Wedd leaf extract**

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ABSTRACT

*Breast cancer ranks as the most commonly identified cancer in women on a global scale, with chemotherapy often limited by adverse effects and multidrug resistance. This has increased interest in medicinal plants as sources of bioactive compounds with improved safety profiles. *Laportea decumana* (Roxb.) Wedd, a traditional medicinal plant from Eastern Indonesia, has shown antioxidant and cytotoxic properties, yet its *in vitro* cellular effects and detailed phytochemical composition remain incompletely understood. GC–MS analysis was conducted on ethanol and *n*-hexane extracts of *L. decumana* leaves. *In vitro* cell viability and preliminary cellular response activity were evaluated on MCF-7 breast cancer cells using the MTT assay, and IC₅₀ values were calculated. GC–MS analysis revealed that both extracts were dominated by cyclotrisiloxane, hexamethyl-, along with bioactive compounds such as phytol, neophytadiene, and *n*-hexadecanoic acid. Both extracts associated with moderate decreases in MCF-7 cell viability, with IC₅₀ values of 175 µg/mL (ethanol extract) and 179.42 µg/mL (*n*-hexane extract), suggesting measurable *in vitro* cytotoxic activity within the tested concentration range. *Laportea decumana* leaf extracts exhibit a diverse phytochemical profile and demonstrate moderate *in vitro* growth-inhibitory effects against MCF-7 cells, supporting their potential as sources of bioactive compounds for preliminary *in vitro* evaluation rather than definitive therapeutic application.*

Keywords: GC–MS, *in vitro* study, *Laportea decumana*, MCF-7 cells, phytochemical profile