

# Antimicrobial-Guided Metabolomic Analysis of Essential Oil Derived from the Aotearoa New Zealand Endemic Plant *Kunzea robusta* (Kānuka)

**Date added:** 3 June 2025

**Last modified:** 3 June 2025

**Project type:** Publication

**Project visibility:** Public

**Local Contexts Project ID:** 34b3d603-60ce-4f58-945c-4dd75ef2dd70

**Project page URL:** <https://localcontextshub.org/projects/34b3d603-60ce-4f58-945c-4dd75ef2dd70>

**Added by:** Manu Caddie | | Researcher

**Project Contact:** Manu Caddie | [manucaddie@gmail.com](mailto:manucaddie@gmail.com)

## Contributors:

## Project Description:

Traditional medicine has been the source of many modern drugs. To explore the pharmaceutical potential of extracts from a taonga (treasured Indigenous plant) species, we obtained an unbiased GC-MS profile of 84 compounds from 99 samples of kānuka oil collected from five land blocks across two seasons. Multivariate analysis correlated the compound profiles with antifungal, antibacterial, and anti-acne activities as determined via growth inhibition of *Candida albicans*, methicillin-resistant *Staphylococcus aureus* (MRSA), and *Propionibacterium acnes*, respectively. The kānuka oil samples had the greatest activity against *P. acnes*. Samples collected during spring were more associated with antifungal activity, while samples collected during autumn were more associated with anti-MRSA and anti-acne activities. While  $\alpha$ -pinene was the most abundant compound, partial least squares regression analysis identified other lead compounds for antifungal activity ( $\alpha$ -muurolene, isoamyl isovalerate, and 4-carene) as well as a common set of lead compounds for anti-MRSA and anti-acne activity that included limonene and nerolidol. An unidentified compound was particularly interesting as it was the only compound to positively correlate to all three bioactivities. The results from this study provide molecular insight into specific compounds in kānuka oil that can be further explored for pharmaceutical and cosmeceutical potential.

## Project Notices



## Biocultural Notice

The BC (Biocultural) Notice is a visible notification that there are accompanying cultural rights and responsibilities that need further attention for any future sharing and use of this material or data. The BC Notice recognizes the rights of Indigenous Peoples to permission the use of information, collections, data and digital sequence information (DSI) generated from the biodiversity or genetic resources associated with traditional lands, waters, and territories. The BC Notice may indicate that BC Labels are in development and their implementation is being negotiated.

## Pānui Whakamārama BC (Māori)

Ko tā te Pānui Whakamārama BC, he āta whakaatu, tērā ētahi tikanga ā-iwi me ōna haepapa ki runga i te whakamahinga, i te horapatanga hoki o tēnei taonga me ōna raraunga rānei. Whakamanahia ai ki tēnei Pānui Whakamārama BC, ko te mana tuku iho o ngā iwi taketake ki roto i ngā kohinga mātauranga pūtaiao, me ngā raraunga hangarau mō runga i ngā hāpori, ngā tāngata, me te rerenga rauropi e noho pū ana i ngā whenua, i ngā wai me ngā rohe o ngā iwi taketake. Kei roto hoki pea i tēnei Pānui BC, ko te kōrero e mea ana, tērā ngā Tohu BC (Rerenga rauropi) e waihangatia ana, ā, kei te whiriwhirihia tonutia tōna whakatinanatanga. Mō ētahi atu kōrero mō ngā Pānui Whakamārama BC, pāwhiritia i konei.

---