Scabies is common in overcrowded and socioeconomically disadvantaged settings, both in the remote Australian Aboriginal population and worldwide, with 300 million cases reported annually (Chosidow, 2006). Scabies is caused by infestation with the parasitic mite *Sarcoptes scabiei*.

Limitations of current drugs -

- Limited ovicidal activity
- Mites' resistance is increasing
- Short skin half-lives
- Repeated application

The Manuka oil has traditionally been used by the Maori people to treat wounds. However, its efficacy as an ovicide and miticide scabies therapy and the active chemical(s) have not been identified. We propose that its natural products, and/or derivatives will provide next generation candidates for a topical scabies treatment.

**Methods**

**Aim 1.** To identify the active natural chemical agent(s) with ovicidal and miticidal activity within Manuka oil

**Aim 2.** In vitro bio assay for determining treatment conditions (concentration & time) of Manuka oil / fractions

- Different fractions/compounds of Manuka oil (KiwiHerb®) have tested in both mite and egg bio assays with different concentrations in different time points.

**Aim 3.** To determine the median lethal concentration (LC 50) of β-triketones on mite killing and egg hatching

- in vitro bio assays were done with six different concentrations (150mM, 100mM, 75mM, 50mM, 25mM, 10mM) for β-triketones to generate the LC 50 with Probit Analysis.

**Analysis of KiwiHerb® using Gas Chromatography–Mass Spectrometry (GC-MS) and Nuclear Magnetic Resonance (NMR)**

- Major Compounds resulted from GC-MS:
  - δ-Cadinene (20.8%)
  - β-triketones (28.1%)
  - Flavesone (4.72%)
  - Isoleptospermone (5.09%)
  - Leptospermone (17.42%)

LC 50 Generation

From the generated LC 50 for β-triketones (BTK), Flavesone was the best with least LC50 of 57.81 mM (95% CI 53.97-61.68) for 4 hours and the Leptospermone was the best with least best with LC50 of 33.59 mM (95% CI 29.23-38.04).

**References**