



Te Niwaha

Research Project Impact Case Study

Exploring new anti-microbial agents sourced from taonga herbal remedies with functional immune health benefits to prevent infectious transmission

Short Research Title

Exploring new anti-microbial agents

Key researchers

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Introduction

The overarching aim of this programme was to identify and validate the immune health benefits of taonga herbal remedies within rongoā rākau, using scientific methods while being guided by existing mātauranga. Led by the BSI, this programme leveraged the institute's proven expertise in characterising the chemical composition of plant and marine-based ingredients and determining their immune-modulatory bioactivity through cell-based and clinical models. BSI's commitment to partnering with Māori in research and innovation, guided by Plant & Food Research's Mātauranga & Taonga Principles, enables the application of rigorous scientific research that align with the mātauranga and priorities of our partners.

Results

To ensure an authentic partnership, this programme took a stage-gated approach, with progress contingent on the completion of each stage. The first stage focused on strengthening collaboration with our kaitiaki partners through informed consent and co-development of frameworks to guide the scientific analysis of rongoā rākau. This began with wānanga, where researchers and kaitiaki partners discussed scientific approaches and shared perspectives. From these discussions, a research framework was iteratively developed with each partner to guide harvesting, sample extraction methods, traceability, scientific analysis (composition and bioactivity), and data storage relating to rongoā rākau.

Extraction and characterisation of composition and bioactivity were carried out using well-established methods recognised in scientific literature. Specifically, protocols for preparing water and ethanol extracts characterising their chemical fingerprints via LC-MS are widely accepted. These methods also reflect traditional preparation practices used by rongoā practitioners, as informed by our kaitiaki partners. Plaque counts and cytokine secretion, which are well established parameters of antiviral and immune-modulatory efficacy, respectively, were used to assess the effects of rongoā extracts on lung cells. Positive bioactivity in these assays highlight the potential of rongoā extracts to protect against or reduce the severity of respiratory virus-related lung damage, such as from RSV.

Impact

Through informed consent and co-development of research frameworks, we have enhanced our partners' knowledge and interest in science. By demonstrating how research can affirm existing knowledge of rongoā rākau and uncover new knowledge (e.g., potential bioactive compounds), we hope these outcomes will inform future access to rongoā rākau for whānau, hapū, and wider communities.

Additionally, this approach has strengthened researchers' capability and confidence in engaging and co-developing research with Māori partners, particularly around significant rongoā rākau. Importantly, it has fostered shared approaches with Māori for exploring indigenous knowledge through science and innovation, supporting growth and success for Aotearoa, New Zealand.