

SUMMER RESEARCH 2024/25

PROJECT ABSTRACT



THE UNIVERSITY OF
WAIKATO
Te Whare Wānanga o Waikato

PROJECT # 41

SUPERVISOR/S:	Senior Lecturer Martin Atkins & Joanne Hicks
PROJECT TITLE:	Testing Kava 'Washdown' Hepatotoxicity using 'Organ on a Chip' Technology – Pilot Trials
FIELD:	Biochemistry
DIVISION/SCHOOL:	HECS - Te Kura Mata Ao School of Engineering
PROJECT LOCATION:	Hamilton

PROJECT ABSTRACT:

Kava (*Piper methysticum*), an important cultural and medicinal Pacific plant, and has been safely consumed for over 2000 years. Modern kava use is evolving and increasing in popularity particularly among non-Pacific and the Pacific diaspora. Non-traditional consumption patterns such as the use of highly processed kava products and extracts, and co-consumption with other substances (e.g. alcohol, energy drinks etc.) has raised the question regarding the safety of such practices. In a recent safety assessment of kava, the Food and Agriculture Organization of the United Nations and World Health Organization expressed the need for fundamental research to reduce possible safety risks to kava consumers. The kava plant has been used for centuries for medicinal, ceremonial and cultural purposes, and has great significance to the people of the Pacific. In some instances, alcohol (typically beer) is used to 'chase' the bitter taste of the kava, in a practice commonly referred to as 'washdown'. The safety of washdown has been questioned and there are concerns that damage may occur to the liver as a result; however there have been no studies examining this issue. This project will use 2-d cell cultures to study the effects of kava and alcohol on target cells. The main objective of this project is to provide initial data regarding the interaction of kava and alcohol on the metabolites of these cells, which will form the basis for later studies (outside the scope of this project) where new 'Organ on a Chip' technology will be used to further investigate these interactions.

STUDENT SKILLS:

- Cell culture techniques
- Biochemical assays
- Data Analysis
- Literature Research
- Scientific Writing and Project Management

PROJECT TASKS:

1. Undertake detailed literature review of kava hepatotoxicity
2. Prepare cell cultures and biochemical assays
3. Investigate kava / alcohol interactions
4. Analyse data
5. Prepare final report
6. Prepare and present a research poster

EXPECTED OUTCOMES:

- Student's Research Poster (as per clause 6 of the [Scholarship regulations](#))
- Detailed literature review
- Provide initial data on kava and alcohol interaction

