Investigating the antiviral activities of traditional Māori and Pacific medicines against influenza A and herpesvirus

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Summary
Despite significant research, few antiviral therapeutics are available for clinical use. The challenges of expensive antiviral development, alongside the fast pace of viral adaptation means that we need to work together to combat the many viral diseases that threaten our health. Indigenous communities have developed a rich tapestry of traditional medicinal knowledge over millennia to heal ailments affecting their communities. By working in partnership with biomedical researchers and traditional medicine practitioners, we may identify additional safe and effective treatment options for these communities where clinical access is inaccessible, unaffordable or not preferred.

Through collaborations and partnerships with traditional Samoan and Māori medicinal practitioners and experts, this Te Niwha funded project aimed to examine the antiviral activities of selected traditional Samoan and Māori (rongoā rākau) medicinal plant extracts against the cold sore virus (herpes simplex virus Type 1) and the respiratory disease-causing influenza A virus. These plant extracts were selected by traditional healers through consultation and examined using lab-based techniques to explore the antiviral power of these medicinal plant extracts against two viruses in the lab. The rongoā work was co-designed with our Māori partner, Dr Jonni Hazeline Koia from Te Reo Tipu Research, including guidance on tikanga and handling of these taonga samples. The Samoan traditional medicine work was co-designed with our Pacific partners at the Scientific Research Organisation of Samoa (SROS) including Masuisuialemalietoa Dr Seeseei Molimau-Samasoni and Victoria University of Wellington including Dr Helen Woolner. Medicinal plant extracts were collected in consultation with traditional healers, and the medicines were code-named to protect the Indigenous knowledge and knowledge holders.

From this research, we found that two Samoan medicinal extracts had significant antiviral activities against the cold sore virus. In particular, one Samoan medicinal extract reduced the amount of virus in the tested samples more effectively than the clinically approved antiviral acyclovir, showing the powerful potential in traditional medicines.

The two Samoan medicines were also tested in combination with the clinical antiviral acyclovir against the cold sore virus and we found that they did not cancel each other's antiviral activities out when used together.

While we found that two rongoā rākau extracts of the three species tested had antiviral activities against the cold sore virus, they had some properties that made it more challenging to study them, and more work is required in this area to see the true potential of these selected rongoā as antivirals. Interestingly, none of the traditional medicinal extracts we tested had any significant antiviral activity against influenza A virus, which supports the importance of preventing infection through tools such as vaccination to protect against severe infection and hospitalisation.

From this research, we identified two Samoan medicinal plant extracts with significant antiviral properties against the cold sore virus, which were previously unknown properties for these medicines. As this study identified a novel use for two Samoan plant-based medicines beyond their traditional uses, this highlights the power of researchers

and communities working in partnership to elevate healthcare and offer additional options to our communities that lack clinical access and/or rely solely on traditional medicines. These results have been shared with our Indigenous partners and collaborators to help guide future healing applications.

Further work is underway in the Netzler lab including a deeper exploration of the antiviral Samoan extracts against other viruses that cause human disease, and with our partners to explore the bioactive components that possess these antiviral activities.