Investigation of the Molecular Mechanism Underlying the Anticancer Activity of the Native Hawaiian Herb Morinda citrifolia: A Safer Alternative for Treating Lung Cancer

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Lung cancer remains one of the leading causes of death worldwide. In 2026 in the United States, an estimated 124,990 people are expected to die from this disease. In Hawai?i, the situation is especially critical due to the high smoking rates, exposure to secondhand smoke, and disparities in healthcare access. Although conventional treatments exist, such as the use of cisplatin chemotherapy, many remain non-selective, causing significant damage to healthy cells, while posing adverse side effects. While the emergence of newer treatments, such as immunotherapy, show promise, cancer cells can develop resistance and its high cost makes these treatments inaccessible for many patients, especially in Hawai?i. Therefore, there is an urgent need for a safe, effective, and accessible lung cancer treatment. Hawai?i is home to a diverse range of native medicinal plants used traditionally to treat various diseases. Among them, Morinda citrifolia (noni) is recognized for its wide ranging therapeutic effects, including the ability to reduce inflammation, lower hypertension, relieve pain, and potentially treat cancer. Recent studies suggest that Morinda citrifolia possesses recorded anticancer properties, however its underlying molecular mechanisms remain unclear, preventing its precise and widespread application as a lung cancer treatment. Moreover, conflicting results from previous studies have further hindered its development as a treatment. This project aims to isolate the effective compound of Morinda citrifolia and evaluate its safety and efficacy compared to the traditional chemotherapy drug cisplatin. In addition, it investigates the underlying molecular mechanism of its anticancer activity, providing essential insights for the future development of lung cancer treatments.

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