

An Indian-Australian research partnership

Project Title:

Extraction of bioactive compounds from horticultural processing waste

Project Number

IMURA0363

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Research Academy Themes:

Highlight which of the Academy's Theme(s) this project will address?

(Feel free to nominate more than one. For more information, see www.iitbmonash.org)

1. Advanced computational engineering, simulation and manufacture
2. Infrastructure Engineering
3. Clean Energy
4. Water
5. Nanotechnology
6. **Biotechnology and Stem Cell Research**

The research problem

India is the one of the largest producers of fruits & vegetables in the world with an annual production of around 94 million tonnes. However, fruits and vegetables processing in India is quite limited compared to developed countries such as USA, Australia and Brazil. These countries have large processing facilities and advance technologies to minimize quantum of fruits and vegetable wastes for their profitable utilization into value added coproducts and improving the overall economics of these units. In India, the discarded portion of some fruits can be very high (e.g mango 30-50%, banana 20%, pineapple 40-50% and orange 30-50%). Therefore, there is often a serious waste disposal problem. Organic wastes despite being a menace to the

environment, represent a potential bioresource for production of value added products.

The proposed project will ascertain how processing of such waste could be resulted into the production of co-products that are rich sources of bioactive compounds. Extracts of natural biomolecules from fruits and vegetables waste could potentially be used as nutraceuticals and dietary supplements.

Project aims

1. To map the gamut of fruits and vegetable processing industry waste in various regions of India and ascertain current practices of waste utilization.
2. To evaluate extraction of biomolecules from selected fruits and vegetable waste (based on literature and survey) using various extraction techniques.
3. To assess techno-economic feasibility of the developed technologies.

Expected outcomes

The proposed project intends to impact directly and indirectly on the environment and on the economies of the beneficiaries and the region. The project will deliver following outcomes

1. Protocols for optimal extraction of biomolecules from selected fruits and vegetables waste.
2. Data on performance of scaled up extraction process
3. Through proper information dissemination, it is expected that the project outputs will increase interest in potential stake holders.

How will the project address the Goals of the above Themes?

The proposed project is 'right on spot' in the domain of 'Biotechnology research' theme. It directly addresses importance of bioactive compounds in human health through the intervention of bioprocesses to deliver safe and nutritious health foods economically by the utilization of horticultural waste.

Capabilities and Degrees Required

Candidate should have a good understanding of Biotechnology/Chemical Engineering/Food Engineering fundamentals.