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Development of Standardized Philippine *Moringa oleifera*-based Food Supplement with Validated Therapeutic Activity by Way of Untargeted Metabolite Profiling and Bioassay-Guided Fractionation

GRANTEE: University of the Philippines Diliman (UPD)

PRINCIPAL INVESTIGATOR: Dr. Hiyas Junio

US UNIVERSITY PARTNER: Rutgers University (RU)

GRANT PERIOD: July 1, 2015 to April 15, 2017

CONTRACT AMOUNT: Php 3,939,519.18 (approximately USD83,900)

Rich benefits from a simple plant

Moringa oleifera, or drumstick tree, locally known as *malunggay*, is gaining recognition worldwide for its nutritional and medicinal uses. Many past and ongoing studies have begun exploring the potential benefits that the plants can offer, such as; high nutritional value, antitumor properties, and antioxidant content. These initiatives sparked the interest of a team of researchers from UPD to participate in advancing the novel findings on *moringa* products through the creation of a metabolic, bioactive, genomic, and transcriptomic profile of the Philippine *M. oleifera* and the development of a prototype food supplement, *Moringa Gold*, with validated therapeutic properties. The assistance of USAID STRIDE and collaboration with Rutgers University paved the way for a yearlong fruitful project implementation.

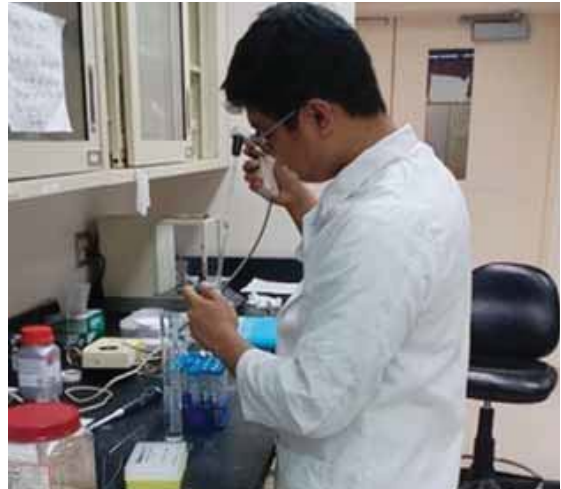


African varieties of Moringa oleifera grown at the Research Greenhouse

Milestones

Accomplishments of the ongoing research are the following:

- Classification of phenotypic variations from the *M. oleifera* plants collected from the Green Earth Heritage Foundation farm in San Miguel, Bulacan, namely: a) petiole color and leaf shape; and b) red and green petiole coloration with ovate, obcordate, and elliptical leaf shape;
- Extraction and evaluation of DNA of three *M. oleifera* plants using Bioline Isolate II Plant, Qiagen DNeasy Plant Mini, and Qiagen DNeasy Plant Maxi (with and without liquid nitrogen) resulted in;
 - increase in DNA yield and purity when using the Qiagen DNeasy Plant Mini Kit on samples homogenized with liquid nitrogen; and
 - highest DNA yield and purity when using the Qiagen DNeasy Plant Mini Kit on samples homogenized with liquid nitrogen.
- Conduct of adequate practice/training on cell revival of the A549 resulted in successful bioassay sampling and dose response of the control drug doxorubicin HCl during the actual experiments; and
- Attainment of ideal cell line target average value of 0.0043g concentrate/ml of extract, indicating a high passing mark. Thus, a new vial of cryopreserved A549 cells has been produced.



Antioxidant extraction for the ABTS assay