LAYMAN'S ABSTRACTS

Main Articles

The Influence of Vegetation and Insect Abundance on Insectivorous Bat Activity During Dusk Emergence in an Urban Green Space in Metro Manila, Philippines

Jay S. Fidelino and Jelaine L. Gan

Bats provide benefits to humans and ecosystems—like regulating insect populations—and are sensitive to changes in the environment. As such, bat activity is increasingly being used to study the effects of urbanization and other land use changes. However, to be effectively used as a bioindicator, baseline information on bat activity patterns must first be established. In this study, we aimed to determine patterns in the abundance and kinds of insect-eating bats present within an urban green space in the Philippines' capital region, and how they are related to habitat type, insect abundance, and environmental conditions during emergence at dusk. We measured bat activity using a portable recorder at five time intervals from 5:30 PM to 7:30 PM, and compared between 10 open and 10 forested sites. We classified calls into distinct kinds called "sonotypes" based on five variables. We found no difference in bat activity between forested and open sites, but more sonotypes were recorded in open sites. Both bat activity and number of sonotypes peaked between 6:00 PM and 6:30 PM, representing a short bout of foraging activity at dusk emergence. However, we did not observe significant relationships between bat activity and insect abundance, air temperature, and relative humidity. Our study found considerable bat activity and diversity in an urban ecosystem, a poorly explored field of research in the Philippines. Additional studies are necessary to understand the impact of land use changes on Philippine bats, and to inform their conservation and management in habitats modified by humans.

Cytotoxic and Genotoxic Potential of the Money Tree *(Pachira aquatica)* Stem and Leaf Extracts

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This study is a preliminary screening of the anticancer potential of stem and leaf extracts of Money Tree, *Pachira aquatica*, one of the plant species with very few studies done. The toxic effects of *P. aquatica* extracts were initially checked using brine shrimp lethality assay (BSLA). Onion root tip chromosomal aberration assay (ORTCAA) was conducted to examine the effects on cell division and the chromosomes of onions. The ability to cause deformities to the developing embryo of zebrafish was determined using zebrafish developmental toxicity assay (ZDTA). Using BSLA, the *P. aquatic* leaf extract was seen as toxic. ORTCAA revealed that all stem extract concentrations reduced cell division when compared to the positive control, while all leaf extract concentrations showed cells that stopped dividing during prophase/metaphase boundary. ZDTA showed 100% embryonic death starting from 20 µg/mL of both extracts after 12 hours of treatment applications. Abnormalities in onion cells and early zebrafish embryonic death implied the activation of programmed cell death. Thus, Money Tree extracts have promising cytostatic (inhibition of growth, division and differentiation of cells) and cytocidal (lethal) effects, important qualities of an anticancer drug, and is therefore a potential source of a nature-based chemotherapeutic compound.

Proliferative Activities of Benguet Legume Cultivars on a Breast Epithelial Cell Line

Cielo Mae D. Marquez, John Carlo F. Dela Cruz, Conrad Allan C. Chong, Leomir A. Diaz, Harold M. Carag, Dhennis T. Versoza, Noel S. Quiming, Marilou G. Nicolas, and Michael C. Velarde

Legumes are commonly grown around the globe and consumed as part of the human diet. Legumes have components that mimic the action of human estrogens, which may disturb normal body processes or promote diseases. Since legume consumption has many nutritive benefits but is also associated with estrogenic

activity, this study investigated the effects of six Benguet legumes on the growth of an estrogen-responsive breast cancer cell line. Among the six legumes, extracts from the common beans and cowpeas slightly promoted the growth of breast cancer cells at a low dose but decreased its growth at a higher dose. This suggests that legumes may contain similar compounds associated with growth-inducing and inhibitory effects on breast cancer cells.

Insights on the Scientific Publications of the Faculty of the College of Science, UP Diliman: 1998 – 2017

Carlos Primo C. David and Mart Cyrel M. Geronia

The publication record of faculty members reflects a research institution's scientific productivity and impact. The quantity of papers published, where it is published, and its citation counts have also become standard metrics in assessing for grants, promotions, and tenure for faculty members. In consideration of these factors, we compiled and analyzed the trends of the 20-year (1998 – 2017) publication record of the UP College of Science (UP Science) spread across 10 institutes and programs. We included 2,295 published papers indexed in Scopus and Web of Science databases by faculty members and researchers affiliated with UP Science from 1998-2017. Overall, the total number of papers has increased in the last few years and, on average, at least one paper is published per faculty member annually. Collaboration with other institutions is up and still increasing, with foreign partnerships outpacing others. UP Science has also increased its papers published in leading journals. We found that during their second decade of service, faculty members begin training younger researchers, shifting roles from being primarily researchers to mentors. These trends may serve as guide on how we can improve scientific productivity not only of the institution but also the faculty and research community of UP Science.

Health Risk Assessment: Total Mercury in Canned Tuna and in Yellowfin and Frigate Tuna Caught from Leyte Gulf and Philippine Sea

Arvin U. Pacoma and Leni G. Yap-Dejeto

Tuna, both canned and locally caught, were analyzed for mercury content. Locally caught tuna, Frigate (*Auxist hazard*) and yellowfin tuna (*Thunnus albacores*), and canned tuna had average concentrations of 0.024 ug/g, 0.002 ug/g, and 0.07 ug/g, respectively. The results suggest that health risk is low in eating any locally caught tuna from Eastern Visayas. Whereas, canned tuna is safe to eat as long as not more than one can per day is consumed by an adult. Lower amounts should be consumed by vulnerable segments of the population such as children and childbearing women.