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In vitro antioxidant properties, total flavonoids, and total phenolic content of some Philippine herbal weeds

Richard I Licayan¹, Romeo M Del Rosario¹, Nenita D Palmes² and Aisle Janne B Dagpin¹ ¹Mindanao University of Science and Technology, Philippines ²Research Extension Development and Educational Advancement Services, Philippines

Hiptage benghalensis, Antigonon leptopus, Macroptillium atropurpureum, and Dioscorea bulbifera L. are herbal weeds that have been used by traditional healers in rural communities in the Philippines as medicine. In this study, the basic pharmacological components of the crude secondary metabolites extracted from the four herbal weeds and their *in vitro* antioxidant properties was investigated to provide baseline data for the possible development of these metabolites in pharmaceutical products. Qualitative screening of the secondary metabolites showed that alkaloids, tannins, saponins, steroids, and flavonoids were present in their leaf extracts. All of the plant extracts showed varied antioxidant activity. The greatest DPPH radical scavenging activity was observed in *H. begnhalensis* (84.64%), followed by *A. leptopus* (68.21%), *M. atropurpureum* (26.62%), and *D. bulbifera* L. (19.04%). The FRAP assay revealed that H. benghalensis had the highest antioxidant activity (8.32 mg/g) while ABTS assay showed that *M. atropurpureum* had the strongest scavenging ability of free radicals (0.0842 mg Trolox/g). The total flavonoid content (TFC) analysis showed that D. bulbifera L. had the highest TFC (420.35 mg quercetin per gram-dried material). The total phenolic content (TPC) of the four herbal weeds showed large variations, between 26.56±0.160 and 55.91±0.087 mg GAE/g dried material. The plant leaf extracts arranged in increasing values of TPC are H. benghalensis (26.565)<A. leptopus(37.29)<*D. bulbifera* L. (46.81)<M. atropurpureum(55.91). The obtained results may support their use in herbal medicine and as baseline data for the development of new drugs and standardized phytomedicines.

jake_ril324@yahoo.com

Floating drug delivery systems: Rationale for drug selection

Sushil Sah

Jaipur National University, India

C ince past three decades, various formulation strategies have been adopted by the researchers to develop controlled drug delivery Systems for better therapeutics and reduced exposure of drugs and active chemical entities to patients. Sequential efforts are been made by the scientists to develop the floating drug delivery as a significant, strategic and prompt system for betterment in formulation design. The numerous drugs from the category of cardiovascular, antidiabetic, diuretics etc. have been developed as floating systems. Still, it is needful to utilize this advanced drug delivery system as a tool to privilege the therapeutic drugs for other categories. For that, the rationale for drug selection becomes quite important for this drug delivery system. The selection criteria for floating systems involve various physicochemical characters of drug. Biopharmaceutical classification system (BCS) is vital criteria for drug to be selected. BCS classification is based on solubility and permeability of drug. For FDDS, solubility of drugs should be highly soluble in stomach to achieve better bioavailability. The dissociation constant of the drug of choice should be >2.5 for acidic drug, so that may remain unionised at gastric pH and drug get absorb in the stomach. For lipophilicity, the partition coefficient of the drug should be >1 for rapid absorption across lipoidal membranes. The half –life of drug should be shorter (2 to 6, preferably). The drug which possesses acid stability can only be formulated as FDDS. Furthermore, drug should have stomach as its absorption window so as to get absorbed at any segment of stomach. At the same time, drugs showing extensive first pass metabolism are the candidate of choice. Drugs with low therapeutic index are unsuitable for incorporation in FDDS formulations as in case of dose dumping, especially in single unit dosage forms. Inspite of above said factors in finding the suitable drug properties, the physicochemical modification of drugs with poor aqueous solubility and low permeability issue, although quite expensive, may be a great favor in utilization of floating systems as an advantageous tool in the era of controlled delivery of drug.

coolsushilsah@gmail.com