World Academy of Science, Engineering and Technology
International Journal of Medical and Health Sciences
Vol:11, No:05, 2017

Physicochemical Properties, Antioxidant and Cytotoxic Activities of Extracts and Fractions from Phyllanthus amarus

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Abstract : Phyllanthus amarus (P. amarus) has been used as a traditional herbal plant for the treatment of chronic ailments such as hepatitis, diabetes and cancer. The objectives of this study were to determine the physicochemical properties, antioxidant and cytotoxic activities of crude P. amarus extracts and fractions using MTT and CCK-8 assays for cytotoxic evaluation. The outcomes indicated that P. amarus methanol (PAM) extract had lower residual moisture (7.40%) and water activity (0.24) and higher contents of saponins, phenolics, flavonoids and proanthocyanidins (1657.86 mg escin equivalents, 250.45 mg gallic acid equivalents, 274.73 mg rutin equivalents and 61.22 mg catechin equivalents/g dried extract, respectively) than those of P. amarus water (PAW) extract, resulting antioxidant activity of PAM extract was significantly higher ($P < 0.05$) than that of PAW extract, PAM fractions and phyllanthin (a major compound in P. amarus). Cytotoxic activity of PAM extract for cancer cell lines of MiaPaCa-2 (pancreas), HT29 (colon), A2780 (ovarian), H460 (lung), A431 (skin), Du145 (prostate), BE2-C (neuroblastoma), MCF-7 (breast), MCF-10A (normal breast), and U87, SJ-G2, SMA (glioblastoma) was higher than those of PAW extract and PAM fractions. Therefore, we can conclude that the PA extracts are a potential source for the development of natural antioxidant products and/or novel anticancer drugs.

Keywords : antioxidant, cytotoxicity, Phyllanthus amarus, physicochemical
Conference Title : ICCPB 2017 : International Conference on Cancer Prognosis and Biomarkers
Conference Location : Tokyo, Japan
Conference Dates : May 28-29, 2017