ISOLATION AND CHARACTERIZATION OF CHEMICAL CONSTITUENTS POSSESSING RADICAL SCAVENGING ACTIVITY OF A SELECTED MYANMAR MEDICINAL PLANT [*PHYLLANTHUS URINARIA* LINN. (MYE-ZEE-PHYU)]

PhD DISSERTATION

NAY MAR SOE

DEPARTMENT OF CHEMISTRY

UNIVERSITY OF YANGON

MYANMAR

MARCH, 2005

ABSTRACT

In the present work, aerial parts of *Phyllanthus urinaria* Linn. (Mye-Zee-Phyu in Myanmar) which is used in the treatment of diseases related to the oxidative stress in Myanmar Traditional Medicinal system was systematically analyzed. The investigation of radical scavenging activity of various crude extracts from aerial parts of *Phyllanthus urinari* Linn. was performed by 1,1 diphenyl-2-picryl hydrazyl (DPPH) assay. IC_{50} means 50% Inhibitory Concentration that is used in DPPH assay. Four extracts (70% acetone, water, 70% EtOH, MeOH) were prepared and the radical scavenging activity was evaluated The activity of 70% acetone extract (IC_{50}=1.08μg/ml) showed nearly equal to water extract (IC_{50}=1.12 μg/ml) and more active than 70% EtOH extract (IC_{50}= 2.04 μg/ml) and MeOH extract (IC_{50}= 3.16 μg/ml). Their activities were compared against standard Butylated Hydroxy Toluene (BHT) (IC_{50}= 1.17 μg/ml). From ethyl acetate soluble fraction of hot water extract, two compounds such as pyrogallol (0.1014%) and gallic acid (0.3048%) were isolated by silicagel column chromatography. From n- butanol soluble fraction of hot water extract, ellagic acid (0.1076%) was isolated by sephadex LH-20 and silicagel column chromatography. From 70% acetone extract, isoflavone (0.0124%) was isolated by sephadex LH-20 and silicagel column chromatography. These isolated compounds were identified by Melting point, TLC, UV, FT-IR , ^{1}HNMR, ^{13}C NMR and mass spectro scopic methods. The isolated compounds such as pyrogallol (IC_{50}=5.47 μg/ml) , gallic acid (IC_{50}= 3.62μg/ml) , ellagic acid (IC_{50} = 2.15 μg/ml) and isoflavone (IC_{50}= 0.97 μg/ml) were found to

show radical scavenging activity. From the results, the activity of isoflavone is higher than that of ellagic acid which is higher than that of gallic acid which in turn higher than that of pyrogallol. Their activities were compared against standard Butylated Hydroxy Toluene (BHT) (IC_{50}= 1.17 μg/ml). It may be inferred that isoflavone showed the highest activity while the pyrogallol indicated the lowest activity. Thus, the water extract of the aerial parts of *Phyllanthus urinaria* Linn. may be used as in the formulation for the treatment of diseases such as cardiovascular and cerebrivascular diseases, some forms of cancer and many age related disorders.

Keywords **:** *Phyllanthus urinaria* Linn.,Radical scavenging activity,DPPH Assay, phenolic compounds.