Ficus deltoidea (*F. deltoidea*) is traditionally used in Malaysia for regulating blood sugar, blood pressure and cholesterol levels. This study was undertaken to investigate antioxidant properties and cholesterol lowering ability of the leaves of *F. deltoidea* employing several *in vitro* assays. The leaves of *F. deltoidea* were extracted separately using double-distilled water. The resulting crude aqueous extracts were partitioned using ethyl acetate to obtain the ethyl acetate and water fractions respectively. The effectiveness of antioxidants in crude aqueous extracts and their corresponding fractions were evaluated by quantitating the total phenolic content (TPC), 1, 1-diphenyl-2-picrylhydrazyl (DPPH) radical scavenging activity and cupric ion reducing antioxidant capacity (CUPRAC). While, their cholesterol lowering ability was evaluated by quantitating lipid peroxidation inhibition in the egg yolk system, HMG-CoA reductase inhibition, LDL oxidation inhibition and conjugated diene (CD) formation inhibition. For *in vitro* antioxidant assay, our findings revealed that the crude extract of *F. deltoidea* leaves had the highest TPC (108.21±11.2 mg GAE/g) and antioxidant capacity by CUPRAC method while ethyl acetate fraction of *F. deltoidia* exhibited the highest activity of free radical scavenging activity on DPPH with IC_{50} (5.52 µg/ml). For *in vitro* cholesterol lowering assay, crude extract of *F. deltoidea* leaves showed the highest HMG-CoA reductase with IC_{50} (37.7 ±14.4 µg/ml) and LDL oxidation inhibition activities at concentration 0.1 mg/ml (49.12 ± 2.91%) and 0.5 mg/ml (52.1 ±1.10 %) respectively while water fraction of *F. deltoidea* leaves had the highest inhibition activity in CD formation inhibition assay. This analysis demonstrates crude extract of *F. deltoidea* leaves is a viable source of natural antioxidants and had potential cholesterol lowering effect that can be utilized for functional foods and nutraceutical applications.

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OPTIMISATION OF INDOLE-3-BUTYRIC ACID (IBA) CONCENTRATIONS FOR PRODUCTION OF BIOMASS AND PHENOLICS FROM ADVENTITIOUS ROOTS OF *JUSTICIA GENDARUSSA*

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We investigated different concentrations of IBA to determine its effect on biomass increase and the accumulation of total phenols and flavonoids in adventitious roots of *Justicia gendarussa*. Leaf extracts were cultured in MS-based medium supplemented with different concentrations of IBA (2, 3 or 5 mgL^{-1}). These roots were cultured under darkness in shake flasks for 5 weeks. Total phenolic and flavonoids contents were determined using colorimetric method. Gallic acid and catechin were used as standards. Among the different concentrations of IBA, 2 mgL^{-1} IBA was proven as the best concentration for adventitious roots biomass production (5.90 g of fresh weight (FW) and 0.53 g of dry weight (DW)). On contrary, 3 mgL^{-1} IBA induced higher phenolic and flavonoid contents than other treatments (16.68 mg GAE/g DW and 10.72 mg CTE/g DW). The result indicates that, different IBA concentrations affects biomass and the accumulation of phenolics from adventitious root cultures of *J. gendarussa*. Our finding revealed that, IBA was determined the most suitable auxin for adventitious root proliferation of *J. gendarussa*. Therefore, the optimisation of

auxin concentrations is beneficial to large scale production of biomass and secondary metabolites in *J. gendarussa*.

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PHYTOCHEMICALS SCREENING, THIN LAYER CHROMATOGRAPHY (TLC) PROFILING AND CYTOTOXICITY ACTIVITY OF *QUERCUS INFECTORIA* EXTRACTS

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Preliminary study exerted that, the *Quercus infectoria* ethyl acetate extract was the most cytotoxic toward cervical cancer (Hela) cell line when compared with other extracts. The inhibitory concentration (IC_{50}) recorded was 6 ± 0.33 µg/ml, indicated the potency of the extract need further investigation. Therefore the current study was carried out to screen for phytochemical constituents, TLC profile and cytotoxicity activity of the ethyl extract. Phytochemical screening of ethyl acetate extract and methanol fraction revealed the presence of alkaloids, tannins, glycosides, flavonoids, terpenes and saponins. Then, the crude extract was subjected to TLC analysis to reveal the crude extracts profile. TLC profiling of the ethyl acetate extract showed the presence of various phytochemicals group which indicated valuable clues regarding the polarity and selection of solvents for separation of the compounds in the crude extract. The ethyl acetate crude extract gave tailed and did not have good resolution when subjected to TLC analysis. Hence, the liquid-liquid extraction of the crude extract was carried out in order to improve the resolution and separation of the compounds during TLC analysis. This liquid-liquid extraction was performed using the mixture of n-hexane:methanol (1:3). The n-hexane and methanol fractions obtained from the liquid-liquid extraction were subjected to TLC analysis. TLC analysis of n-hexane and methanol fraction showed multiple separation and resolution of the compounds present in the fraction using n-hexane and ethyl acetate as the solvent system. MTT assay for methanol and n-hexane fractions were conducted to evaluate the cytotoxicity activity of both fractions. Result indicated that the methanol fraction was more potent with IC_{50} 10±.33 µg/ml when compared to n-hexane fraction with IC_{50} of 47.5±0.37 µg/ml. Cisplatin was used as positive control and the IC_{50} values against Hela cell lines was 10±0.67 µg/ml. As conclusion, ethyl acetate extract have multiple phytochemical's groups and showed more potent cytotoxicity activity than it fraction's, methanol. However, the IC_{50} of methanol fraction is considered as active fraction because the suggested IC_{50} value for any therapeutic agent for cancer treatments should be less than 20 µg/ml. The findings are potentials to be further investigated in order to develop other alternative of antiproliferative agent for cancer treatment from plant phytochemicals.