Determination of Chemical composition, antioxidant and antimicrobial properties of plants from low-altitude Achanakmar amarkantak biosphere reserve of Madhya Pradesh, India.

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Achanakmar-Amarkantak Biosphere Reserve in central India is blessed with rich floristic diversity and numerous economically important ethno-medicinal plants. Such plants used by the tribal and non-tribal residents of the area in the traditional indigenous treatment system are the backbone of medicinal products administered by local practitioners. So, Our goal was to evaluate the antimicrobial, antioxidant and chemical composition of only methanolic extracts against three pathogens from plants i.e two from rice (Xanthomonas oryzae pathovar oryzae and Magnaporthe grisea) and one from soyabean (Xanthomonas axonopodis pathovar glycines). Whole plant crude extracts from Datura innoxia, Bryophyllum Pinnatum, Thespesia lampas, Cosmos bippinatus, and Holarrhena antidysenterica were investigated for antioxidant activity. Maceration method is used to obtain yields from 80 and 100 percent methanol and chloroform solvents. We find that polar solvent is having better yield. Thespesia lampas has the highest yield in methanol and chloroform extract. The phytochemical assessment revealed alkaloids, saponins, flavonoids, tannins, and terpenoids. Total phenolic and total flavonoid content were determined. Antioxidant potential of extracts was also investigated by various methods viz. total antioxidant assay (TAA), 2,2-Diphenyl-1-picrylhydrazyl (DPPH), 2,2'-azino-bis (3ethyl benzothiazoline-6sulphonic acid) (ABTS), and Ferric reducing antioxidant power (FRAP) assay. In all plants the chloroform extract of Phenolic content recorded ranged from (27.50 ± 0.00) to (493.66 ± 0.020) mg GAE/gm. In methanol extract the phenolic content recorded extracts ranged from (16.83± (0.001) to (91.83 ± 0.001) mg GAE/gm and the flavonoid content recorded for methanol leaf extracts ranged from (17.76 ± 0.005) to (40.45 ± 0.001) mg QE/gm. In methanol extract the TAA content recorded ranged from (124.00± 0.001) to (518.20± 0.020) mg AAE/gm dry weight and the TAA content recorded for chloroform extract ranged from (66.40 ± 0.005) to (439.80 ± 0.009)

mg AAE/gm dry weight. DPPH IC₅₀ value ranged from 147.77 to 288.30 in μ g/ml for methanol extracts. An DPPH IC₅₀ value of 38.75 µg/ml was obtained with standard ascorbic acid. In chloroform leaf extracts IC₅₀ value ranged from 69.02 to 1266.21 in µg/ml. In methanol and chloroform extracts Thespesia lampas IC₅₀ value was found to be the best one. In ABTS of methanolic and chloroform extract IC50 value of Bryophyllum Pinnatum and Thespesia lampas was found to be the best one with the value 10.47 and 13.96 in µg/ml. An ABTS value with BHT and Ascorbic acid is 13.10 and 32.05 in µg/ml. In FRAP from methanolic extract Datura innoxia was found to be highest with value 404.50 µM (Fe (II)/g dry mass. In the chloroform leaf extracts the Cosmos bippinatus was found to be highest with value 263.75 µM (Fe (II)/g dry mass. The present study was also aimed to determine the antimicrobial activities against rice pathogens (Xanthomonas oryzae and Magnaporthe oryzae) and one bacterial pathogen of soyabean. As methanolic extract of Datura innoxia was determined with strongest zone of inhibition against Magnaporthe grisea and Thespesia lampas methanolic extract was having the best antibacterial properties against both bacterial strain used. So, Results indicated that that Thespesia lampas has the highest and Cosmos bippinatus has the lowest phenolic content. Wherereras, Datura innoxia has higerst and Bryophyllum Pinnatum has the lowest flavonoid content in chloroform extract. Datura innoxia as well as Bryophyllum Pinnatum has highest and almost equal flavonoid content in methanol erxtract. Whereras, Thespesia lampas has the lowest flavonoid content in methanol. Determined total antioxidant is highest in methanol extract of Bryophyllum Pinnatum and lowest in Thespesia lampas. In chloroform extract, the total antioxidant is highest in *Thespesia lampas* and lowest in *Bryophyllum Pinnatum*. In *Thespesia* lampas presence of fatty acid such as n-hexadecanoic acid was present in highest percentage and Datura innoxia is rich of alkaloid compounds. These results suggest that these plants with good antioxidant potential can lead us to discover novel agents..

Keywords: *Datura innoxia, Bryophyllum Pinnatum, Thespesia lampas, Cosmos bippinatus, Holarrhena antidysenterica,* Antioxidants, Antimicrobials and Chemical compounds.

Biography

Nitesh Singh, a research scholar in Department of Botany at Indira Gandhi National Tribal University, Amarkantak under the supervision of Dr. Anirudh kumar has been working on screening of plants with extraction, isolation and analysis of bioactive compounds from various weeds and neglected plants to validate them, as good food source which is also effective against phytopathogens.

