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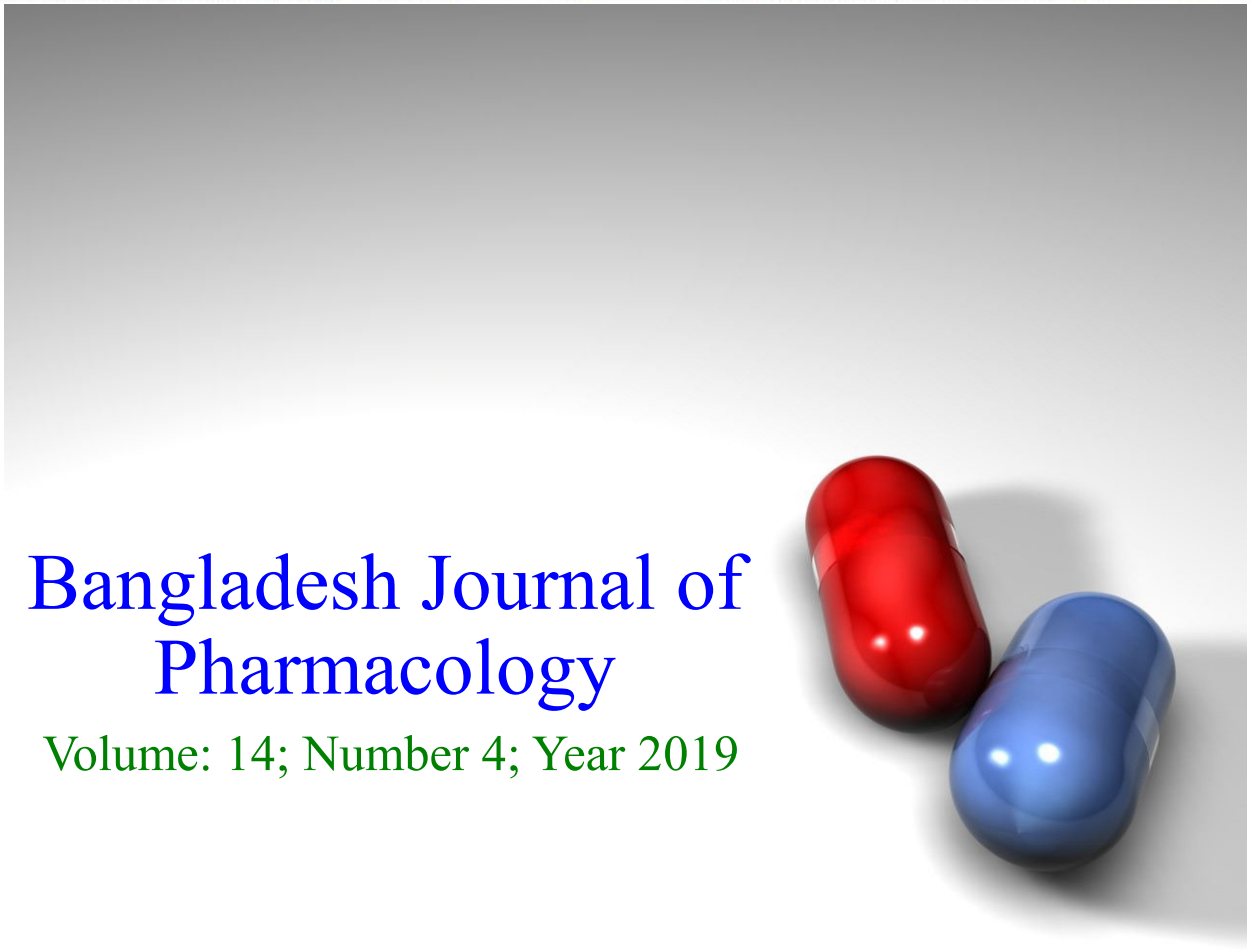

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Letter to the Editor

In vitro antibacterial activity of *Dracaena victoria* leaf extract

Sir,

Among the plants of the genus Dracaena, only *Dracaena spicata* (Nazneen, 2013), *Dracaena cinnabari* (Altwair and Edrah, 2015), *Dracaena deisteliana* (Roger et al., 2015) and *Dracaena mahatma* (Saranya et al., 2018) show antibacterial effects. In the present study, we have examined the antibacterial effect of *Dracaena victoria.*

Fresh, healthy leaves of *D. victoria* were collected locally and transferred to the laboratory. They were washed thoroughly under running tap water and double distilled water and were allowed to dry under shade for 2-3 weeks. The leaves were made into a fine powder by mortar and pestle. To 15 g of the powdered leaves, 150 mL of ethyl acetate and petroleum ether solvents were added separately and kept in shaker for 2 days at 120 rpm. The mixture was filtered (Whatman paper No. 1) and air-dried to obtain the crude extract. About 2-3 g of crude were obtained from each solvent (Papitha et al., 2016).

The qualitative phytochemical screening was carried out using a standard protocol. It is done to determine the presence and absence of alkaloid, anthraquinone glycosides, tannins, phenols, saponins and flavonoids in the leaf powder (Saranya et al., 2018; Ranjitha et al., 2017).

The antibacterial activity of the leaf extracts was checked using the agar well diffusion method. Muller-Hinton agar medium was prepared, sterilized and poured into petri plates. The media were allowed to solidify and the bacterial strains were spread uniformly using sterile cotton swabs. The five different bacterial strains used were *Salmonella typhi, Escherichia coli, Staphylococcus aureus, Pseudomonas aeruginosa* and *Listeria monocytogenes*. Then the wells of 6 mm were made using a sterile cork borer. To the wells, 100 µl of different concentrations (2.5, 5, 10 mg/mL) of the extracts were added and incubated at 37°C for 24 hours. The plates were observed for a zone of inhibition around each well. Streptomycin was used as positive control (Mahalingam et al., 2011; Ravi et al., 2016).

To determine the presence of bioactive compounds, the crude extract obtained from leaves were subjected to GC-MS analysis (Perkin Elmer Clarus 680 with mass spectrometer Clarus 600 equipped with Elite-5MS capillary medium 30, 0.55 mm ID, 250 µm df). The initial temperature of the oven was 55˚C for 3 min and a ramp program 10 min to 300˚C hold 6 min. Helium was used as a carrier gas with a constant rate flow of 1 mL/min. Mass transfer line and source temperature were set at 240˚C. The software used for analysis is Turbo version 5.4.2. By comparing the retention time of chromatographic peaks in the chromatogram with the National Institute of Standards and Technology (NIST-LIB 0.5) Library which is inbuilt in the instrument, the compounds present in the plant extracts were identified. By relating respective peak areas to total ion chromatogram areas, quantitative determination of the compounds can be made (Papitha et al., 2016).

The antioxidant activity of the extract was determined by DPPH assay. From 1 mg/mL, different concentrations (50, 100, 150 µL) of both extracts along with gallic acid as standard. 2 mL of DPPH was added and incubated in dark for 45 min and absorbance was

Table I

Antibacterial activity of the leaf extracts

Extract	Concentration (µg/mL)	Zone of inhibition (mm)				
		L. monocytogenes	*E. coli*	*S. aureus*	*S. typhii*	*P. aeruginosa*
Ethyl acetate	50	1.0	-	-	1.3	-
	75	1.0	-	-	1.1	-
	100	1.1	-	-	1.4	-
Petroleum ether	50	1.3	-	-	-	-
	75	1.1	-	-	-	-
	100	1.4	1.4	-	1.3	0.9

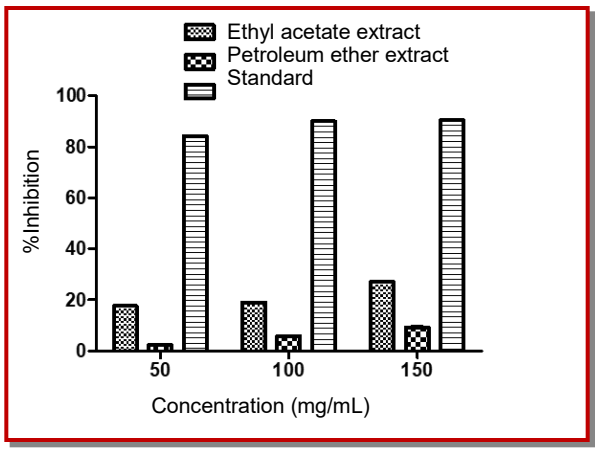

Figure 1: DPPH free radical scavenging activity of ethyl acetate and petroleum ether extract

measured at 517 nm in a UV-visible spectrophotometer. The free radical scavenging activity was calculated by the equation: DPPH radical scavenging effect%= [A_0 - A_1/A_0] where, A_0 is the absorbance of the control and A_1 is the absorbance of the sample (Papitha et al., 2016; Sahu et al., 2013).

The phytochemical analysis of the leaf powder revealed the presence of all the tested phytochemicals. It contains phenols, tannins, saponins, flavonoids, alkaloids, sterols, triterpenes, anthraquinone glycosides

Both extracts showed significant antibacterial activity against *L. monocytogenes*. In ethyl acetate extract, the maximum inhibition about 1.1 cm was observed in 100 mg/mL concentration whereas in petroleum ether 1.4 cm for 100 mg/mL was found (Table I).

The GC-MS analysis of petroleum ether revealed the presence of 10 compounds and ethyl acetate revealed 6 known compounds. The compounds and the retention time (within bracket in min) present in petroleum ether extracts were methylene chloride (2.86), 1,2-benzenedicarboxylic acid, diisooctyl ester (22.94), hexatriacontane (25.70), palmitic acid vinyl ester (26.80, 28.13), myristic acid vinyl ester (28.72), octadecanoic acid, 3-[(1-oxohexadecyl)oxy]-2-[(1-ox (29.42), 2-isopropyl-5–methylcyclohexyl 3-(1-(4-chlorophe (29.77), hexadeca-noic acid, 2-oxo-methyl ester (30.45), 1-naphthalenepropanol, alpha-ethenyldecahydr (31.04). Ethyl acetate (2.87), docosane, 11-decyl- (25.82), octadecanoic acid,2-OXO-,methyl ester (27.60), hexadecanoic acid,(3-bromoprop-2-ynyl)ester (28.32), eicosanoic acid,2-[(1-oxohexadecyl)OXY]-1-[[(1-OXOH (30.69), oxalic acid, hexylneopentyl ester (31.70) were compounds present in ethyl acetate extract.

All the crude extract demonstrated antioxidant activity, on comparing both the crude extract, ethyl acetate extract showed a high scavenging activity. Ascorbic acid was taken as standard showing 95.1 ± 0.9% antioxidant activity at 150 µg/mL concentration (Figure 1).

It can be concluded that leaves of *D. victoria* have potential antibacterial activity. This is the first report on the antibacterial, antioxidant and phytochemical analysis of *D. victoria* leaves extract. Both ethyl acetate extract and petroleum ether extract has significant bioactivity.

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