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Letter to the Editor

Antibacterial activity of *Dracaena colorama*

Sir,

The antibacterial effect of *Dracaena cinnabari* (Altwair and Edrah, 2015), *D. mahatma* (Saranya et al., 2018), *D. marginata* (Shiny et al., 2012), *D. spicata* (Nazneen, 2013) and *D. victoria* (Sundar et al., 2019) have been described. The present study aimed to evaluate the antibacterial activity of *D. colorama* leaf extracts against microbial pathogens.

Fresh and healthy leaves of *D. Colorama* were collected from VIT Greenhouse. Leaves were washed 2-3 times with double distilled water and shade dried for 2-3 weeks. With the help of mortar and pestle, leaves were grounded into a fine powder and stored in a fresh airtight container for further use. Solvents used for the preparation of extract were *n*-hexane, ethyl acetate and acetone. About 10 g of the powdered leaf was added to 100 mL of solvent respectively in the conical flask and kept in the shaker at 120 rpm for 2 days. The content was filtered using Whatman filter paper No. 1. On allowing the filtrate to air dry, 2-3 g of crude extract was obtained.

The crude extract was analyzed for antibacterial activity using agar well diffusion assay. Muller Hinton agar medium was prepared and poured into the Petri plates after sterilization. Bacterial lawn cultures were made using four different test strains (*Escherichia coli, Listeria monocytogenes, Salmonella typhi, Pseudomonas aeruginosa*). The wells were made using cork borer and 100 µL of different concentrations of extracts were added and plates were incubated at 37°C for 24 hours. After incubation, the plates were checked for the zone of inhibition. Streptomycin was used as a positive control.

The crude extracts of the sample were subjected to GC-MS analysis to determine the bioactive compounds present. The instrumentation used for this purpose was a Perkin Elmer Clarus 680, furnished with Mass spectrometer Clarus 600 (EI) with a mounted Elite-5MS capillary column (30, 0.5 mm ID, 250-micrometer df). The preliminary oven temperature was maintained at 55°C for 3 min and then raised to 300°C in 10 min and held for 6 min. The carrier gas used for analysis was helium, at a constant flow rate. The source temperature and mass transfer line was set at 240°C. The software employed for the analysis was Turbo version 5.4.2. The structure of the compound could be identified by comparing the mass spectral pattern obtained with Literature archives and standard compounds present in the National Institute of Standards and Technology Library (NIST-LIB 0.5) which is inbuilt into the GCMS software system (Papitha et al., 2017).

All three extracts showed significant activity against the tested bacterial strains. On comparing to hexane and acetone, ethyl acetate extract was active against all the strains at their 50, 75, 100 µg/mL concentrations.

The compounds identified by GC-MS analysis were represented as compounds and retention time within brackets. The GC-MS analysis of acetone extract revealed the presence of 2,4,4-trimethyl-3-hydroxymethyl-5a-(3-methyl-but-2- (28.7), the hexane extract has 3,5-octanedione,6,6,7,7,8,8,8-heptafluoro-2,2-dimeth (28.5) and (E,E,E)-3,7,11,15-tetramethylhexadeca-1,3,6,10,14-pen (29.0) compound was present in ethyl acetate extract.

The present study concluded that all three (*n*-hexane, acetone and ethyl acetate) extracts have significant antibacterial activity against the tested bacterial strains

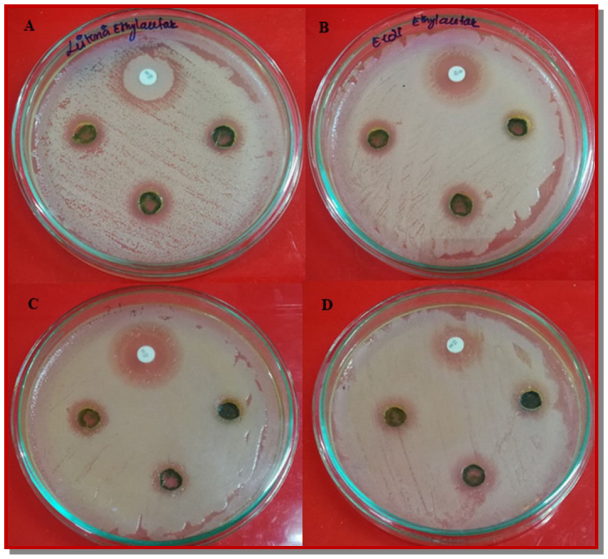

Figure 1: Antibacterial activity of the ethyl acetate extract on *L. monocytogenes* (A), *E. coli* (B), *S. typhi* (C) and *P. aeruginosa* (D)

Table I

In vitro antibacterial activity of the leaf extract

Extract (µg/mL)	Zone of inhibition (mm)			
	L. monocytogenes	*E. coli*	*S. typhi*	*P. aeruginosa*
Hexane (50)	11	12	-	14
Hexane (75)	12	14	-	15
Hexane (100)	14	14	-	10
Ethyl acetate (50)	13	13	14	14
Ethyl acetate (75)	14	13	11	15
Ethyl acetate (100)	15	14	9	16
Acetone (50)	12	7	12	14
Acetone (75)	12	7	-	15
Acetone (100)	13	8	-	15
Streptomycin (10)	24	2	23	15

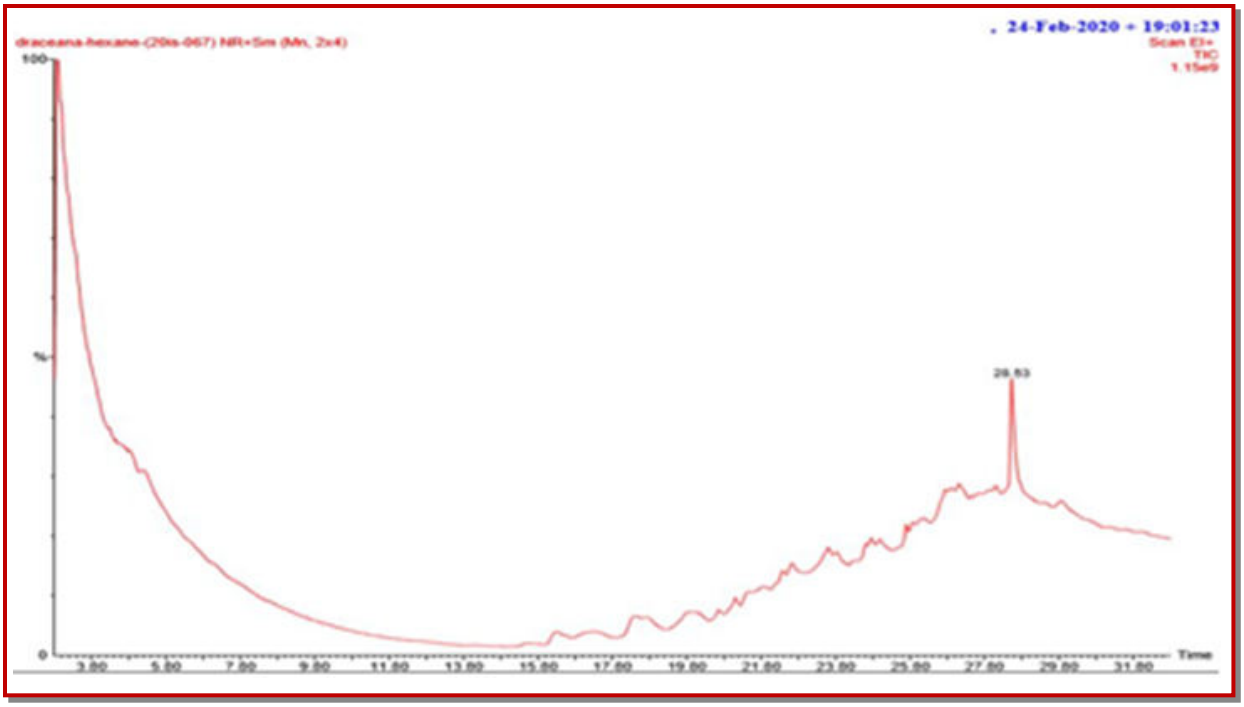

Figure 2: Chromatogram of *n*-hexane extract

under *in vitro* condition. Ethyl acetate extract was active against all the four bacterial strains (*L. monocytogenes, E. coli, S. typhi, P. aeruginosa*) and showed highest zone of inhibition against *P. aeruginosa* of about 16 mm at 100 µg/mL concentration whereas *n*-hexane crude extract did not show any activity against *S. typhi*. This is the first report on the antibacterial activity of *D. colorama* leaf extracts.

They used *E. coli, P. aeruginosa* and *S. typhi* strains similar to that of this study. It is reported that *Draceana* species (*D. cinnabari*, *D. spicata* and *D. mahatma*) were active against *E. coli* whereas *D. spicata* active against *S. typhi* (Nazneen, 2013) and *D. cinnabari* was active against *P. aeruginosa* (Altwair and Edrah, 2015). Shiny et al., 2012 reported antibacterial activity of *D. marginata* against human pathogens. Apart from that, we have used *L. monocytogenes* strain in this study.

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Ranjitha Dhevi V. Sundar and Sathiavelu Arunachalam

School of Biosciences and Technology, Vellore Institute of Technology, Vellore 14, India.

Corresponding author:

email: asathiavelu@vit.ac.in

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