Int.J.Curr.Microbiol.App.Sci (2016) *5*(12): 594-602

International Journal of Current Microbiology and Applied Sciences
ISSN: 2319-7706 **Volume 5 Number 12 (2016) pp. 594-602**
Journal homepage: http://www.ijcmas.com

Original Research Article http://dx.doi.org/10.20546/ijcmas.2016.512.064

In-vitro Antimicrobial Screening of *Dendrophthoe falcata* (L.F.) Ettingsh

Anita Jain[1]* and Mahima Sharma[2]

[1]Department of Botany, Vidya Bhawan Rural Institute, Udaipur- 313001(Rajasthan), India
[2]Pacific Academy of Higher Education and Research University, Udaipur, Rajasthan, India
**Corresponding author*

Keywords

Antimicrobial screening, Phytochemical, Dendrophthoe falcata, Aravalli hills, Rajasthan.

Article Info

Accepted:
18 November 2016
Available Online:
10 December 2016

A B S T R A C T

Bioassay (petroleum ether, chloroform, ethyl acetate and methanol) of various leaf and stem extracts of *Dendrophthoe falcata* (L.F.) Ettingsh were investigated for an *in vitro* antimicrobial activity against five bacteria: *Escherichia coli, Staphylococcus aureus, Klebsiella pneumoniae, Pseudomonas aeruginosa* and *Streptococcus pneumoniae* and two fungi *Candida albicans and Aspergillus niger*. Among all the extracts of leaf and stem, methanolic and ethyl acetate shows good sensitivity against all the tested organisms. Furthermore, among fungi studied, methanolic extract of leaf showed higher antifungal activity against *A. niger* while in stem ethyl acetate and methanol showed moderate antifungal activity against *A. niger*. In *C. albicans* ethyl acetate extract of stem found to most active. The present investigation showed the effectiveness of crude extract of this plant against tested microorganisms.

Introduction

Dendrophthoe falcata (L.F.) Ettingsh belongs to family Loranthaceae, is an evergreen hemiparasitic plant grown on different host trees like *Boswellia serrata, Mangifera indica, Ficus religiosa, Madhuca latifolia, M. indica and F. rumphii* etc. (Singh and Gupta, 2013). It is also known as '*Vanda*' in the Indian Ayurvedic system of medicine and '*Vrksadani*' and '*Vrksaruha*' in 'Sanskrit'. It is indigenous to tropical regions especially in India, Srilanka, Thailand, China, Australia, Bangladesh, Malaysia and Myanmar (Manthri *et al.*, 2011).

Whole plant and part/s like bark, Leaves, flower, stem and fruits possesses medicinal potential and indigenous communities use it for treatment of various human and animal ailments like rheumatic complaints (Md. Shahidullah, 2009; Shanavaskhan, *et al*., 2012), leucorrhoea (Shanavaskhan *et al*., 2012; Rothe, 2003), as contraceptive (Mairh *et al.*, 2010), skin diseases (Kunwar *et al*., 2005; Ganasen *et al.*, 2009), bone fracture (Kunwar *et al*., 2005; Partha & Hossain, 2007), asthma (Reddy *et al*., 2006; Kumar *et al.*, 2012), wound healing (Vijigiri and Sharma, 2010; Kunwar *et al*., 2005), for abortion (Kunwar *et al*., 2005; Ganasen *et al*., 2006; Kaur and Mehta, 2014) and schizophrenia (Mali and Bhadane, 2011). Ethnoveterinary use of this plant is also reported by Katewa & Jain (2006), extract of

whole plant is applied locally on uterus of cattle in volvo-vaginal-uterine prolapse. Its pharmacological activities like anti-oxidant, anti-hyperlipidaemic, anti-diabetic, diuretic and antilithiatic activity have also been studied (Tenpe *et al*., 2008; Pattanayak and Sunita, 2008; Aleykutty *et al*., 1993). The plant contains phytosterols, flavonoids, quercetin, phenolic compounds, tannin and terpins (Pattanayak and Sunita, 2008; Dashora *et al*., 2010) etc.

Antibacterial and antifungal screening of aerial parts of *Dendrophthoe falcata* was studied by Pattanayak & Sunita (2008) while Patil *et al.,* (2012) studied antibacterial sensitivity of different solvent of leaves of *D. falcata* growing on *M. indica.* Perusal of literature indicates that *D. falcata* , growing hemiparasitically on *B. serrata,* yet not studied for their antimicrobial potential. Thus, the present studies undertake to check antimicrobial potential of various extracts of leaves and stem of the *D. falcata* growing on *B. serrata.*

Materials and Methods

Collection of plant material

The leaves and stem of *D. falcata* growing on *B. serrata* were collected from the southern Aravalli hills of Rajasthan. The plant was identified from its morphological features as mentioned in different standard text and flora (Hooker, 1872-1897). The voucher specimen has been deposited at VBRI, Udaipur for further reference.

Preparation of extracts

Stem and leaves washed, shade dried and powdered by using a pulveriser. Coarse powders (100g of stem and 90gm of leaves) then subjected to successive extraction with organic solvents such as petroleum ether, chloroform, ethyl acetate and methanol by Soxhlet method for 12 hrs. The extract were filtered and filtrate was concentrated to dryness under reduced pressure in rotary vacuum evaporator and stored at 4℃. Percent extractive yield was calculated by the following formula and are listed in table-1.

$$\text{Percent extractive} = \frac{\text{weight of dried extract}}{\text{Weight of dried plant material}} \times 100$$

To make stock solution of 100mg/ml of each extract (crude drug) the appropriate amount is weighed and dissolved in DMSO. The stock solution was passed through 0.2µm pyrogesic filter to sterilize the solution and further concentrations of 50 mg/ml, 25 mg/ml and 12.5 mg/ml was made by diluting with Di Methyl Sulfoxide (DMSO).

Test microorganism

The pathological strains of test organism *i.e. Escherichia coli* (MTCC 118), *Staphylococcus aureus* (MTCC 96), *Klebsiella pneumoniae* (MTCC 39), *Pseudomonas aeruginosa* (MTCC 424) and *Streptococcus pneumoniae* (MTCC *655), *Aspergillus niger* (MTCC 281) and *Candida albicans* (MTCC 183) were obtained from MTCC, Chandigarh, India and again identified by standard methods of identification **(**Collee *et al*., 1996).

Antimicrobial Susceptibility Testing

Well Diffusion Method

The *in vitro* antimicrobial activity was determined by the agar well diffusion method (Guven *et al*., 2006). Cell suspensions containing 10^6 CFU/ml cells for bacteria and yeasts and 10^5 spore/ml of fungi were prepared and 100µl was evenly spread on the surface of the nutrient agar for bacteria and sabouraud dextrose agar medium for yeasts and fungi using glass

spreader. The wells of 6 mm diameter were made at equidistant. 100µl volumes of crude extract of each concentration were dispensed into wells, the plate were incubated at 37° C for 24 hrs for bacterial strains, 48 hrs for yeasts and 72 hrs for fungi at 28° C. The diameter of zone of inhibition was measured. As reference antibiotic Meropanum (5µg/ml) was used against all the tested bacteria and Amphoteracin-B (30 µg/ml) for yeast and fungi.

Minimum inhibitory concentration (MIC)

The estimation of MIC of the crude extracts was carried out using the method of agar well diffusion (Mohana *et al.,* 2008; Bais *et al*., 2013) with some modification. Approximate amount of extract was taken from the solution of the crude drug sample (12.5mg/ml) with DMSO and diluted it serially (1:1) with DMSO to the concentration of 0.012mg/ml. As a result, a series of the sample solution in decreasing concentration was obtained by a ratio of 0.5 (final concentration: from 6.25mg/ml to 0.012mg/ml). In this method the least concentration of each extract showing a clear zone of inhibition was taken as the MIC. The MIC value was defined as the lowest concentration to inhibit visible growth of microbes.

Preliminary phytochemical screening

All the extracts of leaves and stem of *D. falcata* were screened for various secondary metabolites such as tannins, alkaloids, phenols, steroids, flavonoids, and saponins using standard methodology (Panday & Tripathi, 2014).

Results and Discussion

In-vitro antimicrobial screening of various extracts of leaves and stem of *D. falcata*, was shown in Table-2 and 3. The antimicrobial activity was dose-dependent because activity at 100 mg/ml more than other concentrations against the entire tested microorganism. As shown in Table-2, the extract form the *D. falcata* leaves and stem displayed antimicrobial activity against the tested bacterial strains, with the diameter of zone of inhibition ranging between 10mm to 20mm. Among the all extract of leaf, both methanol and ethyl acetate extract produce 20 ± 0.0 mm zone of inhibition against *S. pneumoniae* and methanol extract of leaves also produce 17 ± 0.0 mm zone of inhibition against *K. pneumoniae* while in stem, ethyl acetate extract showed higher antibacterial activity against *P. aeruginosa* (20 ± 0.0) and *S. pneumoniae* (19 ± 0.0).

Furthermore, among fungi studied (Table-3), methanolic extract of leaf showed higher antifungal activity against *A. niger* with a zone of inhibition 22 ± 0.0 mm while in stem ethyl acetate and methanol showed moderate antifungal activity against *A. niger* with a zone of inhibition 22 ± 0.0 and 21 ± 0.0 mm respectively. In *C. albicans* ethyl acetate extract of stem found to most active with a zone of inhibition 11.33 ± 0.57.

The MIC of ethyl acetate extract against the entire tested microorganism was observed to be a range of 0.781 to 6.25 mg/ml (Table-4). Table-1 shows percentage extractive values of *D. falcata* leaf and stem extracts obtained with various solvents. Ethyl acetate extract gave maximum percent extractive value.

A preliminary screening was done to check the presence of various phytoconstituents in the extracts (Table-5). It was found that chloroform extract of *D. falcata* leaf shows presence of phenols. Ethyl acetate extracts shows presence of flavonoids, phenols, steroids and saponins while methanol extracts shows presence of flavonoids, phenols, saponins and tannins.

Table.1 Yield of extracts of leaves and stem of *Dendrophthoe falcata* extracted in different solvents by soxhlet apparatus

Solvents	Leaves	stem
Petroleum ether	1.63 %	7.17 %
Chloroform	2.33 %	2.12 %
Ethyl acetate	21.32 %	17.39 %
Methanol	1.44 %	1.66 %

Table.2 Showing zone of inhibition of different extracts of *D. falcata* against bacteria

Name of Organisms	Cons. Mg/ml	*D. falcate*							
		Leaf extracts				Stem extracts			
		PE	Chlo	E A	Meoh	PE	Chlo	E A	Meoh
Escherichia coli (MTCC 118)	**100**	11 ± 0.0	12 ± 0.0	13 ± 0.0	13 ± 0.0	-	12 ± 0.0	13.33 ± 0.57	12 ± 0.0
	50	10 ± 0.0	11 ± 0.0	12.66±0.57	11.33±0.57	-	11 ± 0.0	13 ± 0.0	11.33 ± 0.57
	25	-	10 ± 0.0	12.33±0.57	10.33±0.57	-	10.33 ± 0.57	12.66 ± 0.57	11 ± 0.0
	12.5	-	-	12 ± 0.0	10 ± 0.0	-	10 ± 0.0	12 ± 0.0	10 ± 0.0
	6.25			11.33 ± 0.57				11.33±0.57	
	3.125			11 ± 0.0				10.66±0.57	
	1.562			10.66±0.57				10.33 ± 0.57	
	0.781			10 ± 0.0				10 ± 0.0	
	0.390			-				-	
Klebsiella pneumoniae (MTCC 39)	**100**	-	12.33 ± 0.57	16.33 ± 0.57	17 ± 0.0	-	-	17 ± 0.0	15 ± 0.0
	50	-	12 ± 0.0	15 ± 0.0	15.66 ± 0.57	-	-	16 ± 0.0	14.33 ± 0.57
	25	-	11± 0.0	13 ± 0.0	13 ± 0.0	-	-	15 ± 0.0	12.66 ± 0.57
	12.5	-	10 ± 0.0	12 ± 0.0	12 ± 0.0	-	-	13 ± 0.0	11± 0.0
	6.25			11± 0.0				12 ± 0.0	
	3.125			10 ± 0.0				11 ± 0.0	

	1.562			-				10.33 ± 0.57	
	0.781			-				10 ± 0.0	
	0.390			-				-	
Staphylococcus aureus (MTCC 96)	**100**	-	12 ± 0.0	15 ± 0.0	15 ± 0.0	-	-	17 ± 0.0	16.33 ± 0.57
	50	-	11± 0.0	13.66 ± 0.57	13.33 ± 0.57	-	-	16 ± 0.0	15 ± 0.0
	25	-	10 ± 0.0	12 ± 0.0	12 ± 0.0	-	-	14.66 ± 0.57	14 ± 0.0
	12.5	-	-	11.66±0.57	11.33± 0.57	-	-	14 ± 0.0	13 ± 0.0
	6.25			11± 0.0				13 ± 0.0	
	3.125			10 ± 0.0				12 ± 0.0	
	1.562			-				11 ± 0.0	
	0.781			-				10 ± 0.0	
	0.390			-				-	
Pseudomonas aeruginosa (MTCC 424)	**100**	-	-	14.66 ± 0.57	15.33 ± 0.57	-	-	20 ± 0.0	18 ± 0.0
	50	-	-	13 ± 0.0	14 ± 0.0	-	-	19 ± 0.0	17 ± 0.0
	25	-	-	12 ± 0.0	13.66 ± 0.57	-	-	18 ± 0.0	15.66 ± 0.57
	12.5	-	-	11± 0.0	12 ± 0.0	-	-	16.66 ± 0.57	15 ± 0.0
	6.25			10 ± 0.0				13 ± 0.0	
	3.125			-				11 ± 0.0	
	1.562			-				10 ± 0.0	
	0.781			-				-	
	0.390			-				-	
Streptococcus pneumoniae (MTCC *655)	**100**	-	12 ± 0.0	20 ± 0.0	20 ± 0.0	-	12 ± 0.0	19 ± 0.0	19 ± 0.0
	50	-	11± 0.0	18 ± 0.0	17.66 ± 0.57	-	11± 0.0	16 ± 0.0	15.33 ± 0.57
	25	-	10 ± 0.0	16.66 ± 0.57	16 ± 0.0	-	10.33 ± 0.57	14.33 ± 0.57	13 ± 0.0
	12.5	-	-	14 ± 0.0	14 ± 0.0	-	10 ± 0.0	12.33± 0.57	12 ± 0.0
	6.25			12 ± 0.0				11 ± 0.0	
	3.125			10 ± 0.0				10 ± 0.0	
	1.562			-				-	
	0.781			-				-	
	0.390			-				-	

Abbreviations: PE- Petroleum ether, Chlo- Chloroform, EA- Ethyl acetate, MeOH- Methanol

Table.3 Showing zone of inhibition of different extracts of *D. falcata* against fungi

Name of Organisms	Cons. Mg/ml	*D. falcate*							
		Leaf extract				Stem extract			
		PE	Chlo	E A	Meoh	PE	Chlo	E A	Meoh
Aspergillus niger (MTCC 281)	100	10 ± 0.0	16.33 ± 0.57	19 ± 0.0	22 ± 0.0	12 ± 0.0	13 ± 0.0	22 ± 0.0	21 ± 0.0
	50	-	16 ± 0.0	17.33 ± 0.57	19 ± 0.0	10 ± 0.0	12 ± 0.0	20 ± 0.0	19 ± 0.0
	25	-	13 ± 0.0	17 ± 0.0	16 ± 0.0	-	10 ± 0.0	18.66±0.57	18 ± 0.0
	12.5	-	11.66 ± 0.57	16 ± 0.0	16 ±0.0	-	-	17 ± 0.0	16.66±0.57
	6.25			15 ± 0.0				16 ± 0.0	
	3.125			13 ± 0.0				15 ± 0.0	
	1.562			11 ± 0.0				12 ± 0.0	
	0.781			-				11 ± 0.0	
	0.390			-				-	
Candida albicans (MTCC 183)	100	-	-	-	-	-	10.33 ± 0.57	11.33 ± 0.57	-
	50	-	-	-	-	-	-	10 ± 0.0	-
	25	-	-	-	-	-	-	-	-
	12.5	-	-	-	-	-	-	-	-
	6.25			-				-	
	3.125			-				-	
	1.562			-				-	
	0.781			-				-	
	0.390			-				-	

Table.4 Antimicrobial activity of ethyl acetate extract of different plant part of *D. falcata* in term of MIC.

Name of organisms	E A extract *D. falcata*	
	Leaves	Stem
	MIC mg/ml	MIC mg/ml
Escherichia coli (MTCC 118)	0.781	0.781
Klebsiella pneumoniae (MTCC 39)	3.125	0.781
Staphylococcus aureus (MTCC 96)	3.125	0.781
Pseudomonas aeruginosa (MTCC 424)	6.25	1.562
Streptococcus pneumoniae (MTCC *655)	3.125	3.125
Candida albicans (MTCC 183)	-	-
Aspergillus niger (MTCC 281)	1.562	0.781

Table.5 Qualitative examination of secondary metabolites of extracts of *Dendrophthoe falcata* leaves and stem

S. No.	Phytochemicals	Petroleum ether extract		Chloroform extract		Ethyl acetate extract		Methanol extract	
		Leaves	Stem	Leaves	Stem	Leaves	Stem	Leaves	Stem
1.	Alkaloids	-	-	-	-	-	-	-	-
2.	Flavonoids	-	-	-	-	++	-	+	-
3.	Steroids	-	-	-	-	+	-	-	-
4.	Phenols	-	-	+	-	++	++	++	+
5.	Tannins	-	-	-	-	-	+	-	++
6.	Saponins	-	-	-	-	++	++	+	+

Patil *et al.,* (2012) studied antimicrobial sensitivity of different solvent extracts of leaves of *D. falcata* growing on *M. indica* at the concentration of 200 mg/ml. Different extracts of leaves displayed antimicrobial activity against the tested bacterial (*S. aureus*, *E. coli* and *P. aeruginosa*) and fungal (*A. niger* and *C. albicans)* strains with the diameter of zone of inhibition ranging between 10 mm to 14 mm while the different extract of leaves of *D. falcata* growing on *B. serrata* found to be most active against same tested bacterial and fungal strains with zone of inhibition ranging between 10mm to 22mm at the concentration of 100 mg/ml. The present finding demonstrate that *D. falcata that* growing on *B. serrata* shows better antimicrobial activity than growing on *M. indica.*

The present study demonstrate that, plant extracts in ethyl acetate and methanol provided a good zone of inhibition while other two extracts were found to be less active against the tested organisms (Table 2 and 3). The present investigation clearly establishes the antimicrobial potential of the plant and suggests the need to further exploit in the management of microbial diseases caused by these bacteria in humans. From the result obtained it supports the folkloric usages of *D. falcata* as a therapeutic agent. Further phytochemical investigation suggests that all the extract contain certain constituents with antimicrobial properties that can be used as antimicrobial agents in new drug for the therapy of infectious diseases caused by pathogen.

References

Aleykutty, N.A., Srinivasan, K.K., Gundu, R. P., Udupa, A. C., Keshavmurti, 1993. Diuretic and antilithiatic activity of *Dendrophthoe falcata*. *Fitoterapia,* 64: 325-331.

Bais, Y., Chaudhari, S.B., Belani, S., Umarkar, A.R. 2013. Evaluation of antimicrobial activity of plant leaf *Argemone Mexicana*. *Inter. J. Pharm. and Biol. Sci*., 3(1): 41-45.

Collee, J. G., Miles, R. S., Watt, B. 1996. Test for identification of bacteria. In MacKie & McCartney's Practical Medical Microbiology. 14: 131-149.

Dashora, N., Agrawal, R., Sodde, V., Prabhu, K.S., Lobo, R. 2010. Pharmacognostical evaluation of *Dendrophthoe falcata*. *J. Phar. Res.*, 3(5):971-974.

Ganasen, S, Ponnuchamy, M., Kesavan, L., Selvaraj, 2009. Floristic composition and parasites on the selected sacred groves of Pallapatty village (Reserved forest), Tamil Nadu. *Ind. J. Tradi. Know.*, 8(2): 154-162.

Ganasen, S., Venkateshan, G., Banumathy, N. 2006. Medicinal plants used by ethnic groups Thottianaickans of Semmalai hills (reserved forest), Tiruchirappalli district, Tamil Nadu. *Ind.. J. Tradi. Know.*, 5(2). 245-252.

Guven, K., Yucel, E., Cetinta, F. 2006. Antimicrobial activities of fruits of Crataegus and Pyrus species. *Pharmaceu. Bio.*, 44(2): 79-83.

Hooker, J.D. 1872-1897. Flora of British India, Reeve & Co., NR Ash food, Kent., Vol.1-7.

Katewa, S. S., Jain, A. 2006. Traditional folk herbal medicines. Apex Publishing House, Udaipur.

Kaur, H., Mehta, R. 2014. Medicinal plants as a source of alternative medicine in birth control: a review. *World J. Pharma. Res.*, 3(10):306-322.

Kumar, Y. V., Sekhar, P. C., lakshmi, B. S., Harasreeramulu, S. 2012. Folk Medicinal plants used in the treatment of asthma in polavaram forest area, West Godavari district, A. P., India. *Int. J. Ayru. Her. Med.*, 2(6):947-953.

Kunwar, R. M., Adhikari, N., Devkota, M. P. 2005. Indigenous use of mistletoes in tropical and temperate region of Nepal. *Banko Janakari*, 15(2):38-42.

Mairh, A.K., Mishra, P.K., Kumar, J., Mairh, A. 2010. Traditional botanical wisdom of Birhore tribes of Jharkhand. *Ind. J. Tradi. Know.*, 9(3): 467-470.

Mali, P.Y., Bhadane, V. V. 2011. Ethnomedicinal wisdom of tribals of Aurangabad district (M.S.), India. *Ind. J. Nat. Por. Res.*, 2(1): 102-109.

Manthri, S., Kota, C.S., Talluri, M. 2011. Pharmacognostic, phytochemical and pharmacological review of *Dendrophthoe falcata*. *J. Phyto. Phytopharma.*, 3 (3): 18-25**.**

Md Shahidullah, Al-Mujahidee, Md Uddin, S.M.N., Md H.S., Hanif, A., Bari, S, Md., R. 2009. Medicinal plants of the Santal Tribe residing in Rajshahi district, Bangladesh. *American-Eurasian J. Sustainable Agri.*, 3(2): 220-226.

Mohana, D.C., Satish, S., Raveesha, K.A. 2008. Antibacterial evaluation of some plant extracts against some human pathogenic bacteria. *Advs. in Biolo. Res*., 2 (3-4): 49-55.

Pandey, A., Tripathi, S. 2014. Concept of standardization, extraction and pre phytochemical screening strategies for herbal drug. *J. Pharmacognosy & Phytochem*., 2 (5): 115-119**.**

Partha, P., Hossain, A.B.M. E. 2007. Ethnobotanical investigation into the mandi ethnic community in Bangladesh. *Bangla. J. Plant Taxon*., 14(2): 129-145.

Patil, S.H., Patil, S.V., Jadhav, R.B., Talele, G.S., Surana, S.J. 2012. Antimicrobial activity of an Indiane Mistletoe, the hemiparasite *Dendrophthoe falcata* L.F. (Loranthaceae). *J. Res. Educ. Indian med*., 18(2): 107-111.

Pattanayak, S.P., Sunita, P. 2008. Wound healing, anti-microbial and antioxidant potential of *Dendrophthoe falcata* (L.f) Ettingsh. *J. Ethnopharma*., 120: 241–247.

Reddy, K. N., Reddy, C. S., Trimurthulu, G. 2006. Ethnobotanical survey on respiratory disorders in eastern ghats of Andhra Pradesh, India. *Ethnobot. Leaflets*, 10:139-148.

Rothe, S. P. 2003. Ethnomedicinal plants from Katepurna wildlife sanctuary of Akola district. *Ind. J. Tradi. Know.*, 2(4): 38-382.

Shanavaskhan, A.E., Sivadasan, M., Alfaran, A..H, Thomas, J. 2012. Ethnomedicinal aspects of angiospermic epiphytes and parasites of Kerala, India. *Ind. J. Tradi. Know.*, 11(2): 250-258.

Singh, R.B., Gupta, P. K. 2013. Morphotaxonomy, medicinal use and new host range of *Dendrophthoe falcata* var. coccinia in Champaran, its cause and consequences. *Ind. J. lif Sci.*, 2(2) : 39-42.

Tenpe, C.R., Upaganlawar, A.B., Khairnar, A.U., Yeole, P.G. 2008. Anti-oxidant, anti-hyperlipidaemic and anti-diabetic activity of *Dendrophthoe falcata* leaves. A preliminary study. *Pharm. Mag*., 4(16).

Vijigiri, D., Sharma, P. P. 2010. Traditional use of plants in indigenous folklore of Nizamabad district, Andhra Pradeh, India. *Ethnobot. Leaflets.*, 14:29-45.

How to cite this article:

Anita Jain and Mahima Sharma. 2016. *In-vitro* Antimicrobial Screening of *Dendrophthoe falcata* (L.F.) Ettingsh. *Int.J.Curr.Microbiol.App.Sci.* 5(12): 594-602.
doi: http://dx.doi.org/10.20546/ijcmas.2016.512.064