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In vitro screening of antifungal activity of acetone extract of *Cucumis sativus* var *Hardwickii* royle

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Abstract
The present deals with in vitro study of antifungal activity of *Cucumis sativus* var *hardwickii* Royle, in acetone extract. The extraction was made by Soxhlet apparatus. The antifungal properties were determined by poison food technique method using test fungi such as *Curvularia lunata, Drechslera avenaceum, Fusarium oxysporum, Aspergillus niger and Trichoderma viridi*. These test fungi were found to be sensitive to extract as compared to control. A less zone of inhibition was recorded against *Fusarium oxysporum*, followed by against *Aspergillus niger* in acetone extract. Stem and fruit extract prepared in acetone proves to possess good antifungal properties, followed by fruit extract against *Drechslera avenaceum.*

Keywords: *Curvularia lunata, Drechslera avenaceum, Fusarium oxysporum, Aspergillus niger and Trichoderma viridi*, soxhlet apparatus

Introduction
Cucumis sativas var hardwickii (Royle) is a trailing or climbing annual herb, native of tropical Asia and Africa but widely growing throughout India, produce globose or subglobose pepo fruit, with green strips and turn to pale yellow when ripe. The pulp is bitter in taste. Because of bitter taste it is used in Ayurveda as well as traditional medicine. Fruit is nutritive and demulcent. The juice of the fruit is used for anti-acne lotion as well as in treatment of whitlow. The seeds are having cooling effect, tonic and diuretic. Plant is used in headache and diabetics.
The fruit contains steroid and triterpenoid compounds with several enzyme erepsin, vitamin B and C. proteolytic enzymes, along with malic dehydrogenase, ascorbic acid oxidase, succinic dehydrogenase, stearic, oleic, palmitic acids. The seeds contain sitosterol, stigmasta and alkaloid cucurbitaside while leaves show ferredoxin. Therefore, this plant possesses a huge number of phytochemicals, hence an attempt was made to stud its antifungal property in acetone extract.

Material and Methods
The fresh stem and fruits were collected from Ambai defence colony near Shivaji University campus Kolhapur, during autumn season. The collected stem and fruits were brought to laboratory, washed with tap water initially, later by distilled water. Soon after the material were cut into small pieces and sun dried for 2-3 days. Later powdered with domestic grinder. The dried sample were used for experimental study. About 10 g of stem and fruit powder were subjected to extraction separately. The extraction was carried by Soxhlet apparatus. The solvent acetone was used for extraction. The test fungi such as *Curvularia lunata, Drechslera avenaccum, Fusarium oxysporium, Aspergillus niger* and *Trichoderma viridi* were procured from Department of Microbiology, Shivaji University, Kolhapur and Agriculture college Kolhapur. These fungi were maintained in PDA slants and inoculum prepared with saline distilled water. The antifungal activity was carried out by poison food technique method, (Ravi Kumar Patil *et al.*, 2007) [7]. These petriplates were incubated 48 hours and average inhibition zone was calculated in triplicate and compared with control (Solvent- acetone).

Result and Discussion
Results were depicted in table 1. Among all five test fungi species screened, *Drechslera avenaccum*, very sensitive or in active to fruit extract in acetone of *Cucumis sativas* var *hardiwickii* Royle (Table 1). It shows a least zone of inhibition (0.7 cm) followed by *Fusarium oxysporum* both in stem and fruit extract of acetone, indicates that, stem and fruit of *Cucumis sativas* var *hardiwickii* Royle possess a considerable amount fungicide. A similar were documented by Nagaraja *et al.,* (2010) [3] in *Orobanche.* Nayemulla Sheriff *et al.,* (2006). Meanwhile a meagre growth of less inhibition is recorded in stem and fruit extract of acetone against *Aspergillus niger*. The stem extract shows 1.1 cm of inhibition and 1.2 cm of fruit extract prepared in acetone.as compared to control. A parallel report were published by Nagaraja *et al* (2009) [4] in *Mappia foetida*, Nagaraja *et al.,* (2019) [5] in *Rouvolfia tetraphyla*. A negligible zone of inhibition were recorded in *Trichoderma viridi* 2.0 cm in stem extract and 2.7 cm in fruit extract prepared in acetone as compared to control acetone, indicates that the plant stem and fruit contain good amount of fungicidal property and forms a good solvent for extraction, along with *Curvularia lunata* (Table1).
Hence extract of higher angiosperm plants acts as good source of renewable antibodies against fungi and bacteria (Fridous *et al.,* 1990) [1], as a result phytochemical extracted in acetone solvent proves to possess potential fungicidal property. Therefore, present study may be helpful in preparing the formulation in plant disease management as an ecofriendly bio pesticides.

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Table 1: Acetone extract of Stem and Fruit of *Cucumis sativus var hardwickii* Royle Against some test fungi.

Sr. No.	Test Fungi	Zone of inhibition (Cms) Acetone		
		Control	Stem	Fruit
1	*Curvularia lunata*	1.6	2.2	2.4
2	*Drechslera avenaccum*	2.1	2.4	0.70
3	*Fusarium oxysporium*	1.4	0.85	0.78
4	*Aspergilus nigetr*	2.0	1.1	1.2
5	*Trichoderma viridi*	5.4	2.0	2.7

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