

ISOLATION, IDENTIFICATION AND PATHOGENICITY OF *A. SESAMI* CAUSING ALTERNARIA
LEAF SPOT OF SESAME

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Sesame (*Sesamum indicum* L.) is the fourth important oil seed crop in Indian sub-continent only after groundnut, rape seed, mustard and sunflower. Oil content of sesame varies from 46 to 52%. Sesame oil contains two antioxidants viz. sesamin and sesamol which impart a high degree of resistance against rancidity. Its oil is mostly used for cooking, in manufacturing of perfumed oil and also used for the medical purpose. The sesame oil with high-unsaturated fatty acids and unique nutritive composition makes it near a perfect food (Lokesha and Prasad, 2006). The yields level of sesame in India is very low and highly inconsistent. Susceptibility of sesame crop to biotic (disease) pressure is one of the major constraints identified. Such widely cultivated sesame crop suffers heavily due to ravages of many pathogenic fungi. Among all pathogenic fungi, *Alternaria sesami* which cause leaf spot is a major limiting factor in production, leading to heavy losses. Therefore the objectives of this study included isolation, purification, identification & pathogenicity of pathogenic fungus causing leaf spot disease of sesame. The pathogen was isolated by tissue segment method on PDA medium. Sesame leaves showing characteristic of *Alternaria* leaf spot symptom were cut into small pieces of 0.5 to 1.0cm, surface sterilized with 0.1 percent mercuric chloride for one minute and washed with sterile distilled water thrice and blot dried with sterilized filter paper. The sterilized leaf bits were placed in Petri plates containing sterilized PDA medium. The plates were incubated at $27 \pm 2^\circ\text{C}$ for five days and observed for the fungal growth. The fungus was purified by hyphal tip technique and the purified isolate was maintained on PDA plates for further studies. The pathogen was identified up to species level based on their cultural and morphological characters.

The pathogenicity of *A. sesami* was confirmed by Koch's postulates. Twenty days old

sesame seedlings were kept in glass house in poly bag. Three replications were maintained as well as control treatment. The conidial suspensions (5×10^5 Spores ml^{-1}) were prepared in phosphate buffer (pH-7) from ten days old PDA culture of *A. sesami*. The spore suspension was sprayed on to the sesame seedlings while sterile water was used for spraying on control treatment. The inoculation was done on cool evening hours. The symptoms were observed and compared with the original symptoms. The fungus was re-isolated from artificially inoculated sesame leaves and compared with original pathogen. The process of isolation resulted that isolate of pathogen was confirmed by morphological and cultural characters as isolates of *A. sesami*. In culture Concentric rings of growth and sporulation was evident of the pathogen. The fungal colony (*A. sesami*) was observed to be white, cottony with profuse aerial mycelium which gradually turned yellowish brown. Aged culture appeared completely black with no aerial mycelium. Colonies were composed almost entirely of conidiophores and conidia. Conidiophores were simple or sparingly branched; they arise directly from hyphae on or beneath the agar surface. Conidiophores gradually enlarge near the apex into a clavate conidiogenous cell that produces a single conidium. Conidiophores were coloured with 0-3 septa. Conidia were observed to arise either singly or in chains at the tip of each conidiophore. Transverse and longitudinal septum formation was abundant and remained throughout enlargement of conidia. Conidium colour was a dilute dull brown with darker major septa. Conidium was obclavate with 5-10 transverse septa and 0 to 4 longitudinal septa. Based on the characters of the colony and morphological characters of conidiophores and conidia the fungus was identified as *Alternaria sesami*. Simmons (2007), Mohanty and Behera (1958) reported similar morphological characters of *Alternaria sesami* in sesame.

Table 1: Effect of fungal spore suspension spray on pathogenicity of *A. sesami* in sesame plant.

Treatment	Disease development		
	Browning appearance	Initial symptoms	Increasing range of disease appearance
Conidial suspension spray	After 7 days	After 10 days small, dark brown to black spots appeared	After 17 days symptoms were also appeared on the collar region of stem
Plain water spray	Symptom not appeared	Symptom not appeared	Symptom not appeared

Initially ten days after inoculation small dark brown to black spots were noticed on leaves of the artificially inoculated plants and after 17th days symptoms were also appeared on the collar region of stem (Table 1). Re-isolation trails revealed that the isolated fungi from

diseased seedlings are found to be identical with those used for artificial inoculation. Usha Rani and Thirupathaiah (1983) confirmed the pathogenicity by spraying the conidial suspension of *Alternaria alternata* on sesame plants respectively.

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