

## **Summary and Conclusion**

According to a summary of the available research and this study, "Management of Cumin (*Cuminum cyminum* L) Wilt (*Fusarium oxysporum*) and Alternaria blight (*Alternaria burnsii*) diseases through different botanicals," the qualitative as well as quantitative differences in the antifungal principles/compounds contained in different plant extracts, which may account for the inhibitory effects of those extracts. The plant extract used in this research work, as a Phyto fungicide to reduce pathogenic fungus on cumin crops.

This investigation reported that *Alternaria burnsii* and *Fusarium oxysporum* are the soli-borne pathogens that survive in the various part of the plant and plant debris. *Alternaria burnsii* is responsible for cumin blight and *Fusarium oxysporum* is responsible for cumin wilt, all over the Saurashtra, part of Gujarat. This pathogen may infect a number of other plants. Cumin disease plants were collected from different villages of Rajkot District and pathogens were isolated on PDA media. Microscopic examination of mycelial growth of pathogens was done after 7-9 days. The primary investigation was done by the LPCB method and further investigation of pathogens was done in the Plant pathology department, at Agriculture University, Junagadh. In the context of sporulation, the results reported in Table 4.6 showed that, at 45X, there are approximately 20 spores in a single microscopic region. had profuse sporulation. According to cultural characteristics & morphology isolated infectious agents were confirmed as *Alternaria burnsii* and *Fusarium oxysporum*.

To prove the pathogenicity of isolated fungi experiment was carried out in the rabbi season during November -2022-March-2023. Pathogenicity of Koch's postulate was carried out in the pot trail. Ten cumin pots have been used to check the harmful effect of *A. burnsii* responsible for blight disease, out of 10 pots 8 pots were infected by the culture of *A. burnsii*, and 2 pots were used as control(uninoculated). The same experiment was carried out to prove the pathogenicity of *Fusarium oxysporum* responsible for cumin wilt. Plants were infected after germination of one month. The

## **Management of Cumin (*Cuminum cyminum* L) Wilt (*Fusarium oxysporum*) and Alternaria blight (*Alternaria burnsii*) diseases through different botanicals**

---

experiment was conducted according to the review literature that proved the pathogenicity of Kitchin's postulate in plants. After one month of inoculation, symptoms started to appear in the cumin plant. Infected cumin plants were collected and brought into the research lab and again reisolated from the infected plant. The two fungi that had been isolated from various plant components were quite successful in damaging the plant, and it was found that the infection was reducing production. This simple and less expensive method to confirm a main contamination alert.

*Alternaria burnsii* and *Fusarium oxysporum* have the potential to regularly seriously harm all forms of agriculture worldwide, not just in Saurashtra, India. To overcome this problem various medicinal plants that grow naturally in the Saurashtra region of Gujarat have revealed strong antifungal properties and were able to stop fungus from growing that cause infection in cumin. Sixteen plants were used at different concentrations (5%, 10%, and 15%) to evaluate the efficacy of the plants. Phytoextracts were prepared in various solvents including water, acetone, and untreated cow urine. Considering the control cost and effect, plant extracts with water, and cow urine can be used as an alternative fungicide. Results of this present study indicated that all selected plant extracts showed antifungal activity against *F. oxysporum* and *A. burnsii*. The plant extract made with acetone and cow urine was found to be most efficient at preventing the growth of *Alternaria burnsii*, which causes cumin blight, and *Fusarium oxysporum*, which causes cumin wilting.

These preliminary results, obtained from in vitro experiments, may be supplemented by other more comprehensive studies in the open field (in vivo).

On the bases of in vitro evaluation of plant extracts, a few phytoextracts were selected for pot trial experiments to evaluate them. Plant extracts such as *Psidium guajavam*, *Piper betle*, *Mimuspos elengi*, *Annona reticulata*, *Millettia pinnata*, *Adhatoda vasica*, and *Azadirachta indica* have significant antifungal properties that can be benefited to create superior, less hazardous, and more environmentally friendly natural fungicides.

According to the findings of this study, certain plant extracts are a useful source of affordable and safe methods for treating *Alternaria burnsii* and *Fusarium oxysporum*. This research has made it possible to identify the best plants that might be utilized as

## **Management of Cumin (*Cuminum cyminum* L) Wilt (*Fusarium oxysporum*) and Alternaria blight (*Alternaria burnsii*) diseases through different botanicals**

---

a Phyto fungicide for managing diseases of crops, with the eventual goal of creating a natural substitute for chemical fungicides. Numerous extracts of botanicals can be utilized as natural antifungal agents to inhibit fungus development and reduce the need for fungicides. The study of more powerful plant-based substances as cutting-edge chemotherapy treatments for plant defense has attracted interest from all around the world.

In addition, at the end of the research work a biochemical test was carried out to evaluate the antifungal activity. According to the estimation of biomolecules in the plant extract, it is concluded that a higher amount of protein, phenol, total sugar, and chlorophyll increases the inhibition of plant disease.

The current work is the crucial step to developing environmentally friendly plant-based pesticides for the control of fungi and the production of marketable botanical formulations. More investigation will be done in order to develop a commercially viable formulation based on field testing and toxicological tests. An important finding is that all biomolecules are polar in nature and more soluble in ethanol, methanol, and water.

This is the first investigation report, which reveals the efficacy of plant extract extracted in cow urine and the extract is as effective as acetone.