

Introduction and Aim

- Ginger (*Zingiber officinale*) is an important spice crop grown for its rhizome
- Pythium Soft Rot (PSR) disease, caused by *Pythium myriotylum* is a major concern for ginger cultivation
- The feasibility of existing control measures in field scenario is not satisfactory
- Priming strategy is widely used to induce resistance in commercial crops
- Priming results in activation of hormone signalling pathways associated with defence response
- For effective priming, it is necessary to identify the molecular mechanisms underlying Pathogen infection
- This study aims to determine the effect of Salicylic Acid Priming on the expression of susceptibility genes in *Zingiber* – *Pythium* interactions

Materials and Methods

- PSR susceptible KAU Athira ginger plants
- Pathogenic *Pythium myriotylum* strain
- Priming agent : Salicylic acid (2 mM)
- Priming by Foliar application
- Quantification of Carotenoids (de Cássia, 2022), Lignin & Phloroglucinol-HCl staining (Schenk & Schikora, 2015) and Total Phenolics (Ainsworth, 2007)
- Disease scoring and Percent of Disease Index (PDI) (Phu Le, 2016)
- Standalone BLAST analysis to mine primers for susceptible genes from in-house transcriptome data
- Total RNA isolation (Rio, 2010) and Real - Time PCR analysis of susceptibility genes

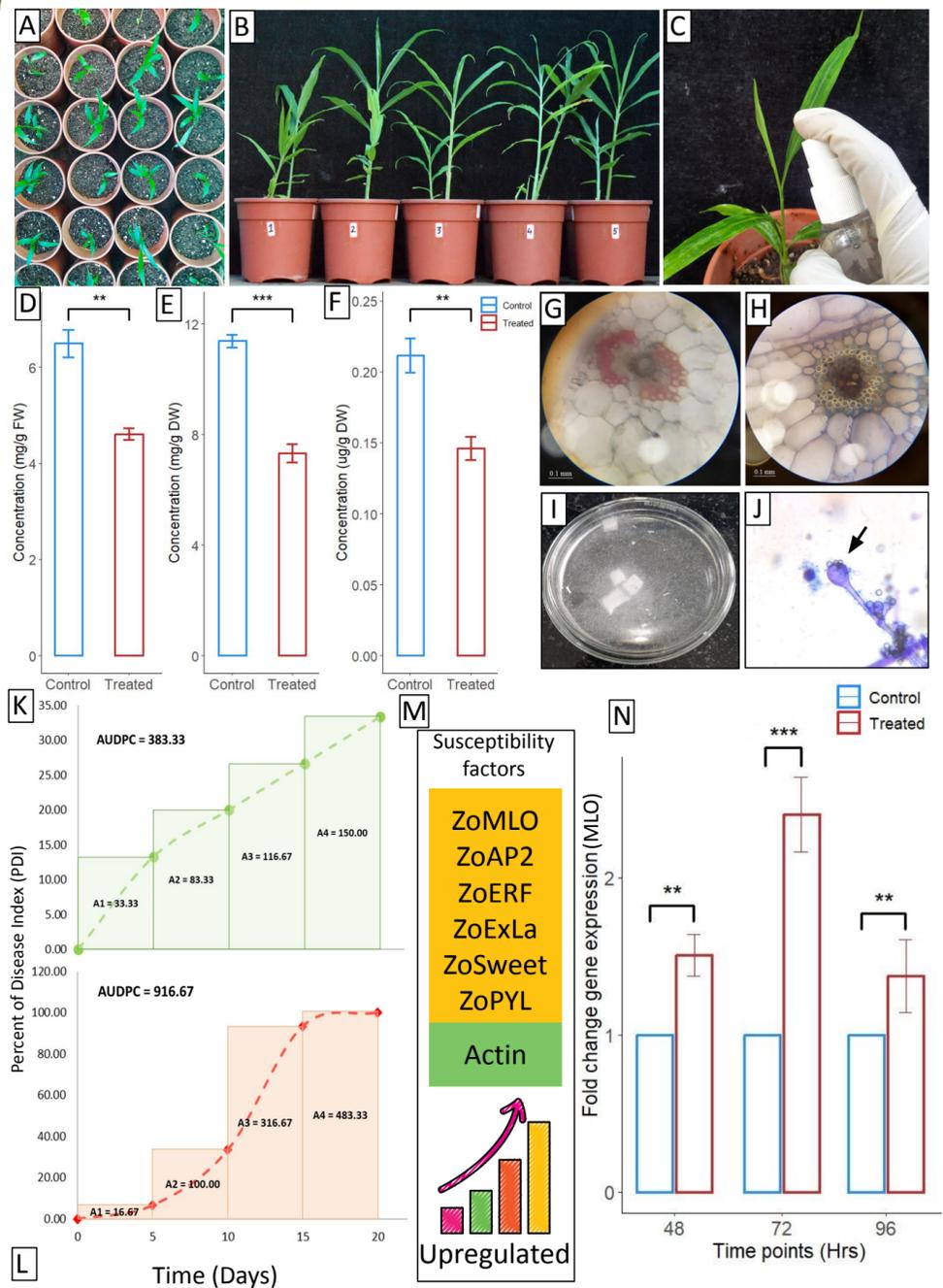
References

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Results and Discussion



A-B) Four-week old healthy ginger plants C) Priming by foliar method D-F) Biochemical estimations; Carotenoids, Total Phenolics & Lignin respectively G-H) Phloroglucinol-HCl staining of Pseudostem ; Control, Treated respectively I) *Pythium* Zoospore development J) Microscopic view of *Pythium* zoospore used for pathogenicity assay K-L) Graphs depicting AUDPC curve; Control, Treated respectively M) Susceptibility genes selected for expression studies N) RT-PCR results of MLO gene at various time points

Conclusion

- Salicylic Acid has been reported to be an important component of defense signalling pathway in plants
- Application of SA increased susceptibility of treated plants to *Pythium* infection
- Results of biochemical, staining & pathogenicity assays point in this direction
- Upregulation of susceptibility genes in treated plants confirm these results
- This study will help to identify the susceptible genes involved during *Pythium myriotylum* attack, which can be silenced using gene silencing methods in future to induce resistance in cultivable ginger