

Antioxidant enzymatic activity of extracts from hairy roots of root lesion nematode susceptible and resistant *Medicago sativa*

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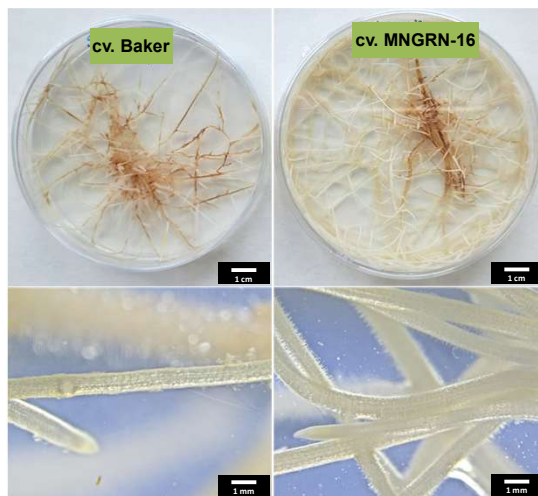
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INTRODUCTION & AIM

Plant parasitic nematodes are widespread and damaging pests. The root lesion nematode (RLN) *Pratylenchus penetrans* can affect several crops. In alfalfa (*Medicago sativa* L.), resistance was associated with increased in expression of key enzymes in phenolic compound biosynthesis. Infection by the RLN is known to incur significant oxidative stress, however, large knowledge gaps remain regarding the plant's resistance mechanisms. Studies targeting the plants strategies to mitigate oxidative stress can provide insight on the mechanisms of resistance employed.

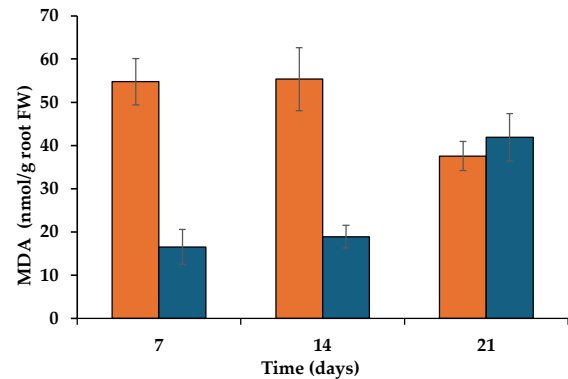
METHOD

- Transgenic roots were obtained by infecting susceptible (cv. Baker) and resistant (cv. MNGRN-16) alfalfa germinants with *Rhizobium rhizogenes*.
- Liquid Schenk and Hildebrandt (SH) medium was used to grow roots for 7, 14 and 21 days.



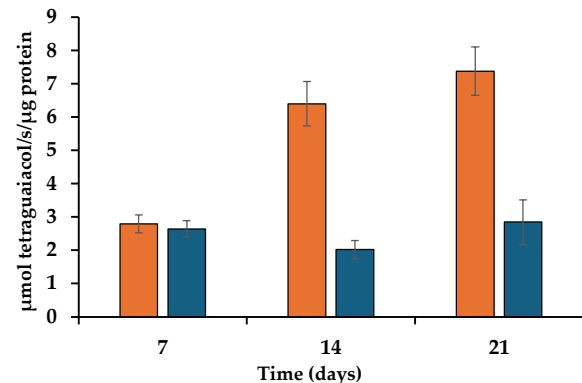
- Oxidative stress was assessed by the thiobarbituric acid reactive substances (TBARS) test.
- Antioxidant enzymatic activity was determined for guaiacol peroxidase (GPX), using extracts of ground fresh transgenic roots.

RESULTS & DISCUSSION



TBARS assay showed:

- **70 and 66% ▼** MDA for **cv. MNGRN-16** when compared to **cv. Baker** after **7 or 14 days**, respectively
- **Non-significant differences** in MDA for **cv. MNGRN-16** after when compared to **cv. Baker** after **21 days**



- Higher **GPX** activity in **cv. Baker** compared to **cv. MNGRN-16** after **14 or 21 days**

CONCLUSION

The susceptible cultivar appears to have higher oxidative stress than the resistant cultivar, suggesting that different mechanisms may be activated upon RLN infection.

FUTURE WORK / REFERENCES

For a more comprehensive analysis, future work will focus on other antioxidant enzymes and oxidative stress markers.