

Dr. Mohammed H. Abass Published Article Abstract

Microbial contaminants of date palm (*Phoenix dactylifera* L.) in Iraqi tissue culture laboratories. Emirates Journal of Food and Agriculture, Vol 25, No 11 (2013)

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Abstract

The date palm is one of the most important economic species of the palm family, grown mainly for its fruits (dates). Nowadays there is increased demand for date palm fruits around the world. To meet this demand, several propagation methods have been utilized, among them micropropagation which has been used in Iraq and many other countries for large-scale multiplication of date palm.

Micropropagation faces several constraints; one is microbial contamination which represents a major challenge to the initiation and maintenance of date palm micropropagation laboratories. In recent years, two major groups of contaminants have been identified and isolated from different date palm tissue culture laboratories in Iraq. The first group is fungi. Several fungal species have been isolated and identified as contaminants; most predominant are: *Aspergillus niger*, *Alternaria alternata* and *Penicillium* spp. The second group is bacteria; predominantly of the genera *Bacillus*, *Staphylococcus* and *Proteus*.

First report of *Nigrospora sphaerica* (Sacc.) Mason as a potential pathogen on date palm (*Phoenix dactylifera* L. Canadian Journal of Plant Pathology , Volume 35, Issue 1, 2013; pages 75-80

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Abstract

Nigrospora sphaerica was isolated from date palm leaves which showed severe symptoms of leaf and stem spot. Pathogenicity tests revealed that several isolates of this fungus reproduced symptoms on the cultivar 'Al-Sayer'. The susceptibility of five different cultivars of date palm showed that 'Halawii' and 'Al-Sayer' were the most susceptible to infection compared with other cultivars such as 'Barhee', 'Zahdi' and 'Khadrawii'. Morphological and molecular characteristics confirmed the identification of *N. sphaerica*. The phytotoxicity of the culture filtrates were investigated, and shown to induce severe symptoms on date palm leaves.

Résumé

Nigrospora sphaerica a été isolé à partir de feuilles de dattier qui affichaient de graves symptômes de la tache des feuilles et des tiges. Des tests de pathogénicité ont montré que plusieurs isolats de ce champignon reproduisaient les symptômes sur le cultivar 'Al-Sayer'. La susceptibilité de cinq cultivars différents de dattier a montré que 'Halawii' et 'Al-Sayer' étaient les plus réceptifs à l'égard de l'infection, comparativement à d'autres cultivars comme 'Barhee', 'Zahdi' et 'Khadrawii'. Les caractères morphologiques et moléculaires ont confirmé l'identification de *N. sphaerica*. La phytotoxicité du filtrat des cultures a été étudiée et elle nous a permis de démontrer qu'elle reproduisait de graves symptômes sur les feuilles de dattier.

The *Hordeum vulgare* signalling protein MAP kinase 4 is a regulator of biotic and abiotic stress responses. *J Plant Physiol.* 2013 Oct 15;170(15):1353-9. doi: 10.1016/j.jplph.2013.04.009. Epub 2013 May 20.

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Abstract

Mitogen activated protein kinase (MAP kinase) signal transduction pathways are important eukaryotic mechanisms for regulating cellular responses to stress. The objective of this work was to investigate the role of the barley MAP kinase HvMPK4 (a homologue of the Arabidopsis MAP kinase AtMPK1) in the plant response to biotic and abiotic stress. Transgenic barley plants bearing antisense or overexpression constructs for HvMPK4 were produced, and RNA blot analysis showed that HvMPK4 gene expression was much reduced in the antisense lines and approximately double in the overexpression lines. Three independent lines of each construct were tested for their response to a fungal pathogen and to salt treatment. The antisense lines were more resistant to the hemibiotrophic fungal pathogen *Magnaporthe grisea*, and showed enhanced levels of salicylic acid (SA) and of hydrogen peroxide following infection; HvMPK4 is thus a negative regulator of SA production post infection. The overexpression lines had constitutively higher levels of jasmonic acid and enhanced levels of ethylene following infection but were not more resistant to the pathogen. However the overexpression lines showed greater tolerance to abiotic stress, as following 2 weeks of salt treatment these lines showed less reduction in fresh and dry weight, accumulated less salt in the leaves and contained enhanced levels of the osmoprotectant amino acid, proline.

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KEYWORDS:

Barley, Cereal, GC–MS, JA, MAP kinase, MAPK, *Magnaporthe grisea*, PAMP, SA, Salt stress, gas chromatography–mass spectrometry, jasmonic acid, mitogen activated protein kinase, pathogen associated molecular pattern, salicylic acid