



Evidence for participation of the methionine sulfoxide reductase repair system in plant seed longevity

Submitted by Emmanuel Lemoine on Thu, 02/12/2015 - 13:12

Titre	Evidence for participation of the methionine sulfoxide reductase repair system in plant seed longevity
Type de publication	Article de revue
Auteur	Chatelain, Emilie [1], Satour, Pascale [2], Laugier, Edith [3], Ly Vu, Benoit [4], Payet, Nicole [5], Rey, Pascal [6], Montrichard, Françoise [7]
Editeur	National Academy of Sciences
Type	Article scientifique dans une revue à comité de lecture
Année	2013
Langue	Anglais
Date	2013/02/26
Numéro	9
Pagination	3633 - 3638
Volume	110
Titre de la revue	Proceedings of the National Academy of Sciences
ISSN	0027-8424
Mots-clés	antioxydant enzymes [8], redox systems [9], seed deterioration [10], seed viability [11]
Résumé en anglais	<p>Seeds are in a natural oxidative context leading to protein oxidation. Although inevitable for proper progression from maturation to germination, protein oxidation at high levels is detrimental and associated with seed aging. Oxidation of methionine to methionine sulfoxide is a common form of damage observed during aging in all organisms. This damage is reversible through the action of methionine sulfoxide reductases (MSRs), which play key roles in lifespan control in yeast and animal cells. To investigate the relationship between MSR capacity and longevity in plant seeds, we first used two <i>Medicago truncatula</i> genotypes with contrasting seed quality. After characterizing the MSR family in this species, we analyzed gene expression and enzymatic activity in immature and mature seeds exhibiting distinct quality levels. We found a very strong correlation between the initial MSR capacities in different lots of mature seeds of the two genotypes and the time to a drop in viability to 50% after controlled deterioration. We then analyzed seed longevity in <i>Arabidopsis thaliana</i> lines, in which MSR gene expression has been genetically altered, and observed a positive correlation between MSR capacity and longevity in these seeds as well. Based on our data, we propose that the MSR repair system plays a decisive role in the establishment and preservation of longevity in plant seeds.</p>
URL de la notice	http://okina.univ-angers.fr/publications/ua7864 [12]
DOI	10.1073/pnas.1220589110 [13]
Lien vers le document	http://dx.doi.org/10.1073/pnas.1220589110 [13]

Liens

- [1] [http://okina.univ-angers.fr/publications?f\[author\]=12210](http://okina.univ-angers.fr/publications?f[author]=12210)
- [2] <http://okina.univ-angers.fr/pascale.satour/publications>
- [3] [http://okina.univ-angers.fr/publications?f\[author\]=12656](http://okina.univ-angers.fr/publications?f[author]=12656)
- [4] [http://okina.univ-angers.fr/publications?f\[author\]=11842](http://okina.univ-angers.fr/publications?f[author]=11842)
- [5] [http://okina.univ-angers.fr/publications?f\[author\]=12154](http://okina.univ-angers.fr/publications?f[author]=12154)
- [6] [http://okina.univ-angers.fr/publications?f\[author\]=12657](http://okina.univ-angers.fr/publications?f[author]=12657)
- [7] <http://okina.univ-angers.fr/f.montrichard/publications>
- [8] [http://okina.univ-angers.fr/publications?f\[keyword\]=12220](http://okina.univ-angers.fr/publications?f[keyword]=12220)
- [9] [http://okina.univ-angers.fr/publications?f\[keyword\]=12221](http://okina.univ-angers.fr/publications?f[keyword]=12221)
- [10] [http://okina.univ-angers.fr/publications?f\[keyword\]=12222](http://okina.univ-angers.fr/publications?f[keyword]=12222)
- [11] [http://okina.univ-angers.fr/publications?f\[keyword\]=12223](http://okina.univ-angers.fr/publications?f[keyword]=12223)
- [12] <http://okina.univ-angers.fr/publications/ua7864>
- [13] <http://dx.doi.org/10.1073/pnas.1220589110>

Publié sur *Okina* (<http://okina.univ-angers.fr>)