conferenceseries.com SciTechnol

Florian Jacques, J Plant Physiol Pathol 2017, 5:5
DOI: 10.4172/2329-955X-C1-012

3rd Global Summit on

Plant Science

August 07-09, 2017 | Rome, Italy

Roles of Arabidopsis ALDH10 enzymes in plant development and stress resistance

Florian Jacques
Université de Technologie de Compiègne, France

Aldehyde dehydrogenase (ALDH) enzymes are able to oxidize a wide range of aldehydes involved in several metabolic pathways, including those leading to resistance to oxidative stress. The ALDH10 family, also called AMADH (amino aldehyde dehydrogenases), is extensively studied in plants due to its role in the synthesis of osmoprotectants such as glycine betaine (GB). However, these enzymes could participate to a large panel of metabolic pathways as they are encoded in non GB accumulating plants, such as Arabidopsis. Furthermore, Arabidopsis ALDH10A8 and ALDH10A9 are highly similar to animal and yeast ALDH enzymes, involved in the carnitine synthesis pathway. They functionally complement a Candida albicans mutant unable to synthesize γ-butyrobetaine by restoring the carnitine associated fatty acid catabolism. Considering the wide range of possible substrates of plant ALDH10 enzymes, we investigate the capability of the plastidial ALDH10A8 and the peroxisomal ALDH10A9 to oxidize substrates in order to clarify their links with metabolic pathways such as γ-aminobutyric acid GABA synthesis, carnitine or GB biosynthesis. Here, we present activity measurements on purified enzymes overexpressed from Escherichia coli, and discuss the developmental patterns of several Arabidopsis knockout mutant lines affected in the activity of both enzymes.

florian.jacques@utc.fr

Notes: