

The ABCG transporter PEC1/ABCG32 is required for the formation of the developing leaf cuticle in Arabidopsis.

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Artykuł

Streszczenie

- The cuticle is an essential diffusion barrier on aerial surfaces of land plants whose structural component is the polyester cutin. The PERMEABLE CUTICLE1/ABCG32 (PEC1) transporter is involved in plant cuticle formation in Arabidopsis. The *gpat6 pec1* and *gpat4 gpat8 pec1* double and triple mutants are characterized. Their PEC1-specific contributions to aliphatic cutin composition and cuticle formation during plant development are revealed by gas chromatography/mass spectrometry and Fourier-transform infrared spectroscopy.
- The composition of cutin changes during rosette leaf expansion in Arabidopsis. C16:0 monomers are in higher abundance in expanding than in fully expanded leaves. The atypical cutin monomer C18:2 dicarboxylic acid is more prominent in fully expanded leaves. Findings point to differences in the regulation of several pathways of cutin precursor synthesis.
- PEC1 plays an essential role during expansion of the rosette leaf cuticle. The reduction of C16 monomers in the *pec1* mutant during leaf expansion is unlikely to cause permeability of the leaf cuticle because the *gpat6* mutant with even fewer C16:0 monomers forms a functional rosette leaf cuticle at all stages of development.
- PEC1/ABCG32 transport activity affects cutin composition and cuticle structure in a specific and non-redundant fashion.

Słowa kluczowe

cuticle, cutin, epidermis, organ fusion

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