

08162 Means and method for the production of transgenic plants that are resistant to clubroot

Technology

The clubroot disease is caused by the obligate biotrophic protist *Plasmodiophora brassicae* and is one of the most damaging for the family of Brassicaceae. The interaction of the pathogen with its host leads to the formation of root galls which creates a strong metabolic sink and influences growth and development of the host plants. Plant hormones, particularly cytokinins are involved in the pathogenesis process. It has been shown that a reduction of overall cytokinin content by constitutive expression of a cytokinin-degrading cytokinin oxidase/dehydrogenase enzyme under a systemic promoter causes resistance to clubroot disease.



The invention describes a novel strategy to establish resistance to the pathogen *Plasmodiophora brassicae*. The strategy relies on the tissue-specific reduction of the content of the plant hormone cytokinin. The success of the strategy is exemplified by the generation of transgenic plants, which express the Cytokinin Oxidase 3 (CKX3) gene under control of at least one promoter which is predominantly active in the hypocotyls and also roots compared to shoot apex tissues of a plant. Thereby the cytokinin content in other tissues above ground remains unaffected.

Competitiveness

- Means and method to confer resistance against *Plasmodiophora brassicae*, which causes club root disease in plants
- Generation of plants with a tissue specific reduction of the cytokinin level
- Avoidance of a strong reduction of the shoot growth, which massively impacts economical and commercial usefulness of the transgenic plants
- Application in agriculture

IP Rights

A European Patent application was filed in July 2009.

Origin

The technology was developed at the Free University of Berlin (Germany).

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- Suitable Industry
Agriculture
- Market Potential
Worldwide
- Development
Proof of principle in
model plant Arabidopsis
- Type of collaboration
License

- Project Manager
Dr. Bettina Büttner
Bettina.buettner@ipal.de
+49 (0) 30 2125 4835
+49 (0) 30 2125 4822
- Provider
ipal GmbH
Bundesallee 171
D-10715 Berlin
Germany
www.ipal.de