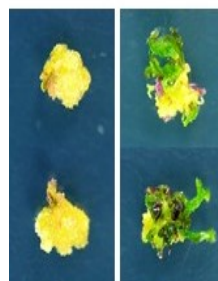


METHOD FOR IMPROVING PLANT REGENERATION

Description

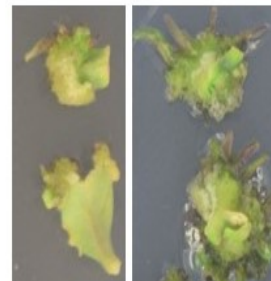
Researchers have developed an in vitro method for plant regeneration comprising at least a step of cultivating an explant from a plant in which the activity of the Mitochondrial Electron Transport Chain (METC) is impaired.
2 ways for inactivating the METC: i) with a mutation in a nuclear gene selected from the gene family coding for PPR proteins and involved in the assembly and/or the activities of the METC, ii) with a culture medium containing rotenone, an inhibitor of complex I of the METC.

Arabidopsis calli



wild type mutant

Tomato cotyledon cuts



mock rotenone

Type of expected transfer

Under license on patent or a license option with R&D program.

Advantages

The inactivation of METC activities has been shown to increase regeneration efficiency in both organogenesis and somatic embryogenesis protocols, for monocot and dicot species. Such approaches can thus reduce the time and costs for plant regeneration (labour and scale of experiments), and enable the recovery of regenerants from cultivars known to be recalcitrant.

Possible applications

The method leads to:

- the regeneration of recalcitrant species (melon, peas and sunflower for example) ;
- the improvement of regenerant recovery rates and a larger range of regenerated genotypes in species for which protocols already exist (as poplar, rice and maize).

It can be used for clonal vegetative multiplication or the regeneration and transformation of plants.

Key words

Regeneration method, in vitro culture, organogenesis, somatic embryogenesis, transformation.

TRL Scale



Development level

This method was developed in Arabidopsis (rotenone and mutations) and the proof of concept was obtained in tomato (rotenone) and in maize (mutation).

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