Biosafety Clearing-House (BCH)

LIVING MODIFIED ORGANISM (LMO)

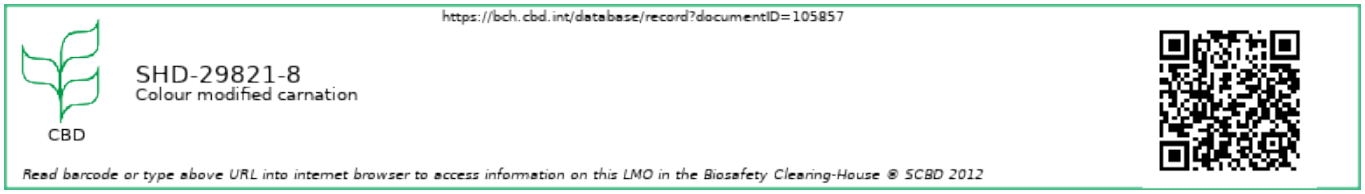
BCH-LMO-SCBD-105857-1

? Decisions on the LMO ? Risk Assessments

LAST UPDATED: 28 AUG 2014

Living Modified Organism identity

The image below identifies the LMO through its unique identifier, trade name and a link to this page of the BCH. Click on it to download a larger image on your computer. For help on how to use it go to the LMO quick-links page.



Name

Colour modified carnation | EN

Transformation event

29821

Unique identifier

SHD-29821-8

Developer(s)

- PERSON: DR YUKIHISA KATSUMOTO | BCH-CON-SCBD-104607-5

PERSON

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RELATED ORGANIZATION

Description

Carnation variety 29821 flowers have a novel colour due to the biosynthesis of the | EN

anthocyanin pigment delphinidin. This pigment is not produced in non-transgenic carnation. The transgenic lines were derived from the parent cultivar which is a pink coloured carnation. The genes introduced into the transgenic carnation lines included a functional dihydroflavonol reductase encoding gene (dfr) from petunia, and a gene (hf1) encoding the enzyme flavonoid 3', 5'-hydroxylase (F3'5'H). Expression of the F3'5'H encoding gene allows for the production of blue coloured delphinidin anthocyanin pigments.

Recipient Organism or Parental Organisms

The term “Recipient organism” refers to an organism (either already modified or non-modified) that was subjected to genetic modification, whereas “Parental organisms” refers to those that were involved in cross breeding or cell fusion.

BCH-ORGA-SCBD-4954-7 ORGANISM | DIANTHUS CARYOPHYLLUS (CARNATION, DIACA) | Crops

Characteristics of the modification process

Techniques used for the modification

Agrobacterium-mediated DNA transfer

Introduced or modified genetic element(s)

Some of these genetic elements may be present as fragments or truncated forms. Please see notes below, where applicable.

BCH-GENE-SCBD-15177-7 ACETOHYDROXY ACID SYNTHASE GENE | (TOBACCO PLANT) | Protein coding sequence | Resistance to herbicides (Chlorsulfuron, Sulfonylurea)

BCH-GENE-SCBD-103771-1 CHALCONE SYNTHASE GENE PROMOTER | (COMMON SNAPDRAGON, SNAPDRAGON) | Promoter

BCH-GENE-SCBD-43793-4 FLAVONOID 3', 5'-HYDROXYLASE GENE | (PANSIES) | Protein coding sequence | Changes in quality and/or metabolite content (Pigmentation / Coloration)

BCH-GENE-SCBD-103772-2 D8 GENE TERMINATOR | (PETUNIA) | Terminator

BCH-GENE-SCBD-100366-6 CAMV ENHANCED 35S PROMOTER | Promoter

BCH-GENE-SCBD-105436-1 ANTHOCYANIN-3',5'-METHYLTRANSFERASE GENE | (TORENIA HYBRID) | Protein coding sequence | Changes in quality and/or metabolite content (Flavonoids (e.g. anthocyanin), Pigmentation / Coloration)

Notes regarding the genetic elements present in this LMO

29821 was developed using recombinant DNA techniques to produce flowers with a unique violet/mauve colour by introducing four genes that function together in the biosynthesis of the anthocyanin pigments related to delphinidin.

The transgenic lines were derived from the parent cultivar which is a pink coloured carnation. The genes introduced into the transgenic carnation lines included a functional dihydroflavonol reductase encoding gene , a gene encoding the enzyme flavonoid 3', 5'-

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hydroxylase (F3'5'H), and an anthocyanin-3',5'-methyltransferase gene.

Expression of the F3'5'H encoding gene allows for the production of blue coloured delphinidin anthocyanin pigments, which are not normally found in carnations. Anthocyanin-3',5'-methyltransferase (AMT) methylates delphinidin-3-glucoside to produce anthocyanins with a novel hue.

LMO characteristics

Modified traits

Resistance to herbicides
- Chlorsulfuron
- Sulfonylurea

Changes in quality and/or metabolite content
- Flavonoids (e.g. anthocyanin)
- Pigmentation / Coloration

Common use(s) of the LMO

Ornamental

Additional Information

Other relevant website addresses and/or attached documents

? Flower colour and cytochromes P450 *(English)*

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Further Information

Questions about the Cartagena Protocol on Biosafety or the operation of the Biosafety Clearing-House may be directed to the Secretariat of the Convention on Biological Diversity.

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