

Biosafety Clearing-House (BCH)

LIVING MODIFIED ORGANISM (LMO)


BCH-LMO-SCBD-14762-14

[? Decisions on the LMO ? Risk Assessments](#)

LAST UPDATED: 05 JUN 2017

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.



ACS-BNØØ8-2
Herbicide Tolerant Canola

CBD

<https://bch.cbd.int/database/record?documentID=14762>



Read barcode or type above URL into internet browser to access information on this LMO in the Biosafety Clearing-House © SCBD 2012

Name

Herbicide Tolerant Canola

EN

Transformation event

T45 (HCN28)

Unique identifier

ACS-BNØØ8-2

Developer(s)

- [ORGANIZATION: BAYER CROPSCIENCE](#) | [BCH-CON-SCBD-7088-7](#)

ORGANIZATION

Bayer CropScience

Website: <http://www.bayercropscience.com>

Description

Canola modified for glufosinate tolerance with the insertion of the phosphinothricin acetyltransferase (pat) gene from *Streptomyces viridochromogenes*, conferring tolerance to phosphinothricin (Glufosinate ammonium) herbicide.

EN

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-12083-7](#) ORGANISM | BRASSICA NAPUS (TURNIP, RAPESEED, CANOLA PLANT,

OILSEED RAPE, RAPE, BRANA) |

Crops

Characteristics of the modification process

Vector

pHoe4/Ac

EN

Techniques used for the modification

Agrobacterium-mediated DNA transfer

Genetic elements construct

P-35S-CaMV
0.533 kb

CS-pat-STRVR
0.552 kb

T-35S-CaMV
0.220 kb

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-15002-4 PHOSPHINOTHRICIN N-ACETYLTRANSFERASE GENE |

Protein coding sequence | Resistance to herbicides (Glufosinate)

BCH-GENE-SCBD-100287-7 CAMV 35S PROMOTER |

Promoter

BCH-GENE-SCBD-100290-6 CAMV 35S TERMINATOR |

Terminator

Notes regarding the genetic elements present in this LMO

The pat gene is a synthetic version of the gene isolated from *Streptomyces viridochromogenes*, strain Tü 494. The nucleotide sequence has been modified to provide codons preferred by plants without changing the amino acid sequence of the enzyme.

Southern blot analysis indicated that a single copy of the transformation cassette was integrated into the host genome with no integration of any portions of the vector backbone.

EN

LMO characteristics

Modified traits

Resistance to herbicides
Glufosinate

Common use(s) of the LMO

Food
Feed

Detection method(s)

External link(s)

? [ACS-BNØØ8-2 - EU Reference Laboratory for GM Food and Feed \(EURL-GMFF\)](#) (*English*)

Additional Information

Additional Information

The canola line T45 was genetically engineered to express tolerance to glufosinate ammonium, the active ingredient in phosphinothricin herbicides (Basta®, Rely®, Finale®, and Liberty®). Glufosinate chemically resembles the amino acid glutamate and acts to inhibit an enzyme, called glutamine synthetase, which is involved in the synthesis of glutamine. Essentially, glufosinate acts enough like glutamate, the molecule used by glutamine synthetase to make glutamine, that it blocks the enzyme's usual activity. Glutamine synthetase is also involved in ammonia detoxification. The action of glufosinate results in reduced glutamine levels and a corresponding increase in concentrations of ammonia in plant tissues, leading to cell membrane disruption and cessation of photosynthesis resulting in plant withering and death.

Glufosinate tolerance in T45 is the result of introducing a gene encoding the enzyme phosphinothricin-N-acetyltransferase (PAT) isolated from the common aerobic soil actinomycete, *Streptomyces viridochromogenes*, the same organism from which glufosinate was originally isolated. The PAT enzyme catalyzes the acetylation of phosphinothricin, detoxifying it into an inactive compound. The PAT enzyme is not known to have any toxic properties. Line HCN28 was derived from T45.

Other relevant website addresses and/or attached documents

? [ACS-BNØØ8-2 - OECD](#) (*English*)

? [ACS-BNØØ8-2 - CERA](#) (*English*)

? [ACS-BNØØ8-2 - Aventis](#) (*English*)

[BCH-LMO-SCBD-14762-14](#)

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.

Secretariat of the Convention on Biological Diversity

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