

Biosafety Clearing-House (BCH)

GENETIC ELEMENT (GENE)

BCH-GENE-SCBD-15164-9

LAST UPDATED: 12 FEB 2021

General information

Name of genetic element

Acetohydroxy acid synthase gene (Chimeric)

EN

Alternate genetic element name(s) (synonym(s))

Acetolactate Synthase

EN

CS-S4-HrA

EN

Abbreviation

CS-SuRB_S4-TOBAC

EN

Category

Protein coding sequence

Is this genetic element a synthetic molecule?

No

Donor organism

Donor organism(s)

[BCH-ORGA-SCBD-12120-4](#) ORGANISM | NICOTIANA TABACUM (TOBACCO, TOBAC) |
Crops

Point of collection or acquisition of the donor organism(s)

Nicotiana tabacum cv. Xanthi

EN

Characteristics of the protein coding sequence

Name of the protein expressed by the coding sequence

Chimeric Acetohydroxy acid synthase

EN

Biological function of the protein

Acetolactate synthase (ALS) catalyzes the first common step in the biosynthesis of the essential amino acids isoleucine, leucine, and valine.

EN

Native ALS is normally inhibited by sulfonylurea herbicides. However S4-HrA is a chimeric gene derived from two different tobacco ALS genes that both encoded herbicide sensitive versions of ALS.

Two resistance mutations were introduced into one of the ALS genes (Pro191Ala and Trp568Leu) via site directed mutagenesis. The DNA fragment containing the resistance mutations was then moved into the second ALS gene through a restriction enzyme fragment.

Related trait(s) or use(s) in biotechnology

Resistance to herbicides
Sulfonylurea

Additional Information

Other relevant website addresses and/or attached documents

- ? [Chimeric RNA DNA Oligonucleotide-Based Site-Specific Modification of the Tobacco Acetolactate Syntase Gene.pdf](#) (*English*)
- ? [Isolation and characterization of plant genes coding for acetolactate synthase, the target enzyme for two classes of herbicides.pdf](#) (*English*)
- ? [The molecular basis of sulfonylurea herbicide resistance in tobacco.pdf](#) (*English*)

BCH-GENE-SCBD-15164-9

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**

413 rue Saint-Jacques, suite 800
Montreal, Québec, H2Y 1N9
Canada
Fax: +1 514 288-6588
Email: secretariat@cbd.int