

GEPHE SUMMARY

SKC1 =OsHKT1 (https://www.gephebase.org/search-criteria/?and+Gene	Gephebase Gene	GephelD
Gephebase=^SKC1 =OsHKT1^#gephebase-summary-title)	GP00001055	Main curator
Published	Entry Status	Courtier

PHENOTYPIC CHANGE

Trait Category		Trait	
Physiology (https://www.gephebase.org/search-criteria/?and+Trait	Category=^Physiology^#gephebase-summary-title)	Trait	
Salt tolerance (https://www.gephebase.org/search-criteria/?and+Trait=^Salt		Trait State in Taxon A	
tolerance^#gephebase-summary-title)		Trait State in Taxon B	
Oryza sativa var. japonica Koshihikari		Ancestral State	
Oryza sativa var. indica; Nona Bokra			
Data not curated			
Taxonomic Status			
Domesticated (https://www.gephebase.org/search-criteria/?and+Taxonomic	Status=^Domesticated^#gephebase-summary-title)		
Taxon A	Latin Name	Taxon B	Latin Name
Oryza sativa (https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=^Oryza+sativa^#gephebase-summary-title)		Oryza sativa (https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=^Oryza+sativa^#gephebase-summary-title)	
rice	Common Name		Common Name
rice; red rice; Oryza sativa L.	Synonyms	rice; red rice; Oryza sativa L.	Synonyms
species	Rank		Rank
	Lineage		Lineage
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; BOP clade; Oryzoideae; Oryzeae; Oryzinae; Oryza		cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; BOP clade; Oryzoideae; Oryzeae; Oryzinae; Oryza	
Oryza () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4527)	Parent	Oryza () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4527)	Parent
4530 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4530)	NCBI Taxonomy ID	4530 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4530)	NCBI Taxonomy ID
Yes	is Taxon A an Infraspecies?	Yes	is Taxon B an Infraspecies?
Oryza sativa var. japonica Koshihikari	Taxon A Description	Oryza sativa var. indica; Nona Bokra	Taxon B Description

GENOTYPIC CHANGE

HKT8	Generic Gene Name	UniProtKB Oryza sativa subsp. indica A2WNZ9 (http://www.uniprot.org/uniprot/A2WNZ9)
HKT1.5; SKC1; OsI_001542	Synonyms	GenebankID or UniProtKB AAZ76552 (https://www.ncbi.nlm.nih.gov/nuccore/AAZ76552)
39946.BGIOSGA001800-PA (http://string-db.org/newstring_cgi/show_network_section.pl?identifier=39946.BGIOSGA001800-PA)	String	
	Sequence Similarities	
Belongs to the TrkH potassium transport family. HKT (TC 2.A.38.3) subfamily.		
	GO - Molecular Function	
GO:0008324 : cation transmembrane transporter activity (https://www.ebi.ac.uk/QuickGO/term/GO:0008324)		GO - Biological Process
GO:0006814 : sodium ion transport (https://www.ebi.ac.uk/QuickGO/term/GO:0006814)		GO - Cellular Component

GO:0016021 : integral component of membrane
(<https://www.ebi.ac.uk/QuickGO/term/GO:0016021>)

Presumptive Null

No (<https://www.gephebase.org/search-criteria?/and+Presumptive+Null=%22No%22#gephebase-summary-title>)

Molecular Type

Coding (<https://www.gephebase.org/search-criteria?/and+Molecular+Type=%22Coding%22#gephebase-summary-title>)

Aberration Type

SNP (<https://www.gephebase.org/search-criteria?/and+Aberration+Type=%22SNP%22#gephebase-summary-title>)

SNP Coding Change

Nonsynonymous

Molecular Details of the Mutation

several candidate missense mutations

Experimental Evidence

Linkage Mapping (<https://www.gephebase.org/search-criteria?/and+Experimental+Evidence=%22Linkage+Mapping%22#gephebase-summary-title>)

	Taxon A	Taxon B	Position
Codon	-	-	-
Amino-acid	-	-	-

A rice quantitative trait locus for salt tolerance encodes a sodium transporter. (2005) (<https://pubmed.ncbi.nlm.nih.gov/16155566>)

Main Reference

Ren ZH; Gao JP; Li LG; Cai XL; Huang W; Chao DY; Zhu MZ; Wang ZY; Luan S; Lin HX

Authors

Many important agronomic traits in crop plants, including stress tolerance, are complex traits controlled by quantitative trait loci (QTLs). Isolation of these QTLs holds great promise to improve world agriculture but is a challenging task. We previously mapped a rice QTL, SKC1, that maintained K(+) homeostasis in the salt-tolerant variety under salt stress, consistent with the earlier finding that K(+) homeostasis is important in salt tolerance. To understand the molecular basis of this QTL, we isolated the SKC1 gene by map-based cloning and found that it encoded a member of HKT-type transporters. SKC1 is preferentially expressed in the parenchyma cells surrounding the xylem vessels. Voltage-clamp analysis showed that SKC1 protein functions as a Na(+) -selective transporter. Physiological analysis suggested that SKC1 is involved in regulating K(+)/Na(+) homeostasis under salt stress, providing a potential tool for improving salt tolerance in crops.

Abstract

Additional References

RELATED GEPHE

No matches found.

Related Genes

No matches found.

Related Haplotypes

EXTERNAL LINKS

COMMENTS