

表2 目的基因在根癌农杆菌介导的甘薯遗传转化中的应用

Table 2 The application of target genes on sweetpotato transformation mediated by *Agrobacterium tumefaciens*

基因类型 Gene types	目的基因 Target genes	用途 Purposes	作者及年份 Authors and years
抗虫害基因 Insects resistance	<i>CpTI</i> 、 <i>GNA</i>	抗虫 Insects resistance	Newell et al., 1995
	<i>SKTI-4</i>	抗甘薯蚁蠊 SP weevil resistance	Cipriani et al., 1999
	芽孢杆菌内毒素 cryIIIa 基因 <i>Bacillus thuringiensis</i> cryIIIa delta-endotoxin gene <i>OCI</i>	抗甘薯蚁蠊 SP weevil resistance 未报导 No report	Moran et al., 1998 阎文昭等, 2004; 蒋盛军等, 2004
		抗甘薯茎线虫病 SP stem nematodes resistance	Gao et al., 2011a
抗病毒基因 Virus disease resistance	<i>SPFMV-CP</i>	抗甘薯羽状斑驳病毒 SPFM virus resistance	Cipriani et al., 2001; Okada et al., 2001
抗真菌病害基因 Fungal pathogens disease-resistance	水稻几丁质酶基因与 β -1,3 葡聚糖酶基因 Rice chitinase gene and β -1,3 glucanase gene	抗真菌病原体 Fungal pathogens disease-resistance	Walls et al., 1996, In Vitro, 32(3): Pt.2, 105A
改良作物品质基因 Quality improvement genes	<i>NtFAD3</i>	改良脂肪酸组成 Alter fatty acid composition of TSP	Wakita et al., 2001
	<i>GBSSI</i>	改良淀粉品质 Alter starch composition of TSP	Kimura et al., 2001
	<i>SBD2</i>	未报道	Xing et al., 2008
	<i>IbSBEII</i>	Not reported 增加直链淀粉酶含量 Increase amylose content	Shimada et al., 2006
	玉米醇溶蛋白基因 zein gene	改良种子贮藏蛋白品质 Improved quality of seed storage protein	高峰等, 2001
	<i>ASP-1</i>	改良种子贮藏蛋白的品质 Improved quality of seed storage protein	Egnin and Prakash, 1995
抗非生物胁迫基因 Tolerant to environment stress	<i>Bar</i>	抗除草剂 Herbicide resistance	Otani et al., 2003; Choi et al., 2007; 臧宁等, 2008; Zang et al., 2009
	<i>Cu/Zn-SOD</i> 和 <i>APX</i>	清除活性氧能力及耐逆性 (耐寒、耐旱、耐盐等) 增强 With the enhancement of resistance to ROS and stress tolerance, such as chilling, drought and salt.	Lim et al., 2007; 李筠等, 2006; 陆燕元和邓西平, 2010; 伍小兵等, 2010
	<i>LOS5</i>	增强耐盐性 Tolerant to salt stress.	Gao et al., 2011b
	<i>IbLEA14</i>	通过 <i>IbLEA14</i> 高水平表达木质素, 增强甘薯愈伤组织的渗透胁迫和耐盐性 Increases osmotic and salt stress tolerance of transgenic calli through <i>IbLEA14</i> expression	Park et al., 2011

注: 转基因甘薯植株TSP; 豇豆胰蛋白酶抑制剂基因CpTI; 雪花莲凝集素基因GNA; 大豆Kunitz型胰蛋白酶抑制剂SKTI-4; 水稻巯基蛋白酶抑制剂基因OCI; 甘薯羽状斑驳病毒外壳蛋白基因SPFMV-CP; 烟草微粒体 ω -3脂肪酸脱氢酶基因NtFAD3; 颗粒结合淀粉合成酶基因GBSSI; 天冬氨酰蛋白酶基因ASP-1; 铜/锌超氧化物歧化酶基因Cu/Zn-SOD; 抗坏血酸过氧化物酶基因APX; 甘薯淀粉分支酶基因IbSBEII; 甘薯晚期胚胎富集蛋白基因IbLEA14

Note: Abbreviations Transgenic sweetpotato plant TSP; cowpea trypsin inhibitor gene CpTI; Galanthus nivalis agglutinin gene GNA; Soybean Kunitz trypsin inhibitor SKTI-4; Rice cysteine proteinase inhibitor gene OCI; Sweet potato feathery mottle virus coat protein gene SPFMV-CP; Tobacco microsomal ω -3 fatty acid desaturase gene NtFAD3; Granule bound starch synthase gene GBSSI; Aspartyl protease gene ASP-1; Cu/Zn superoxide dismutase gene Cu/Zn-SOD; Ascorbate peroxidase gene APX; Starch branching enzyme gene IbSBEII; Sweet Potato late embryogenesis abundant protein gene IbLEA14