Supplementary material for

An innovative germination-driven LAB fermentation strategy for allergenicity reduction in soymilk gels through spatiotemporal protease-mediated epitope disruption

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Supplementary methods

1. Antigenicity assay

100 μL aliquots of each sample were dispensed into the wells of a microtiter plate and allowed to incubate at 25°C for 10 min. Subsequently, the wells were meticulously washed three times. Following this, 100 μL of a horseradish peroxidase-conjugated secondary antibody was introduced into each well, and the plates were incubated again at the same temperature for an additional 10 min. After washing over three times, 100 μL of substrate was added to each well and incubated for 10 min. The reaction was terminated by the addition of 100 μL of stop solution, and the absorbance was then measured at a wavelength of 450 nm. The antigenicity was then calculated using a specific formula:

$$\text{Antigenicity (\%)} = \frac{OD_{450}\,[S(S)M]}{OD_{450}\,(SM)} \times 100\%$$

2. IgE-binding capacity

Sera samples were obtained from individuals with varying severity of soybean allergies, supplied by Chongqing Wolcavi Biological Technology Co., Ltd., Chongqing, China. Prior consent was secured from all patients, and their sera were used in the study with appropriate acknowledgment. The patients included were aged 21, 51, 47, 31, and 28 years, with specific IgE levels of 67.5, 5.11, 6.07, 15.4, and 21.4 KU/L, respectively.

For the assay, 100 μL of each serum sample was dispensed into wells of a 96-well ELISA plate and allowed to incubate overnight. The plates were then washed and treated with BSA-PBS to prevent nonspecific binding. Next, the plates were incubated

with diluted human serum and an anti-human IgE-peroxidase antibody. After further incubation and washing, 3,3',5,5'-Tetramethylbenzidine substrate was added, and the enzymatic reaction was halted with sulfuric acid. Finally, the absorbance was measured at a wavelength of 450 nm.

3. **Peptitomic identification**

Initially, peptides were extracted from F(S)SM samples through the addition of trichloroacetic acid, followed by centrifugation at 12,000 × *g* for 15 min. The resulting supernatant, containing the peptide mixture, was then subjected to desalting by using a MonoSpin C_{18} desalination column. Once desalted, the peptide solution was acidified with 0.1% formic acid (FA) and loaded onto a nano trap column. The elution process occurred at a flow rate of 4 μL/min, utilizing a loading buffer composed of 2% acetonitrile. Subsequently, the peptide solution was eluted onto an analytical column using a gradient elution ranging from 3% to 45% of buffer B (acetonitrile containing 0.1% FA) at a flow rate of 0.3 μL/min. The entire elution procedure lasted for 190 min. MS/MS acquisition in a data-dependent manner was performed utilizing an LTQ-Orbitrap XL mass spectrometer, with the spray voltage adjusted to 2.2 kV. The raw MS data files were subsequently processed using MaxQuant software (version 1.6.2.6), and these data were searched against the protein sequences available on the UniProt database. Carbamidomethylation of cysteine was set as a fixed modification, with protein N-terminal oxidation of methionine as a variable modification.

Supplementary Results

Table S1. The specific information of soy allergies.

Patients	S1	S2	S3	S4	S5
Classification	Allergic				
Skin prick Test type	Positive				
Methodology	ImmunoCAP Fluorometric Enzyme Immunoassay Analysis (FEIA)				
Ethnicity	Asian	Caucasian	Other	Caucasian	Asian
Gender	Male	Male	Female	Female	Male
Blood Type	Not Known	Not Known	A+	A+	Not Known
PLI Permanent ID	33776-LL	33906-AH	34507-HA	34945-ND	28472-JT
Bleed Number	PL 26569	PL 27321	PL 31516	PL 29834	PL 28282
Birth Date	1973, 02, 01	1987, 09, 13	2003, 01, 16	1996, 10, 22	1993, 10, 14
Draw Date	2019, 12, 17	2021, 01, 08	2023, 10, 18	2022, 11, 09	2021, 11, 09
Diagnosis	Allergic rhinitis, Filariasis, No immunotherapy	Allergic rhinitis, Multi-allergic, No immunotherapy, Vaccine for SARS-COV-2	Allergic rhinitis, No immunotherapy	Allergic rhinitis, Allergy diagnosed by a physician, No immunotherapy, No prior history of cancer, Patient has clinically relevant allergic symptomatology	Allergic rhinitis, Allergy diagnosed by a physician, Atopic dermatitis, Eczema, Elevated IgE, Multi-allergic, No prior history of cancer, Patient has clinically relevant allergic symptomatology, Shingles History, Yes-immunotherapy

Table S2. Particle size distribution of the fermented soymilk (FSM) and fermented sprouted seeds-derived soymilk (FSSM) collected at different *L. plantarum* strains and fermented terminal pH values

Fermentation conditions	Samples	D[4, 3]
L. Plantarum O3, pH 5.5	FSM	23.8 ± 0.4 μm ^{d}
	FSSM-1	21.3 ± 0.3 μm ^{g}
	FSSM-2	17.8 ± 0.4 μm ^{i}
	FSSM-3	12.5 ± 0.3 μm ^{n}
L. Plantarum P7, pH 5.5	FSM	22.4 ± 0.6 μm ^{ef}
	FSSM-1	15.9 ± 0.2 μm ^{j}
	FSSM-2	14.9 ± 0.2 μm ^{l}
	FSSM-3	11.3 ± 0.3 μm ^{pq}
L. Plantarum T7, pH 5.5	FSM	36.5 ± 1.2 μm ^{a}
	FSSM-1	32.8 ± 0.4 μm ^{b}
	FSSM-2	22.3 ± 0.2 μm^{f}
	FSSM-3	12.2 ± 0.1 μm ^{no}
L. Plantarum O3, pH 4.5	FSM	23.1 ± 0.2 μm ^{e}
	FSSM-1	19.3 ± 0.4 μm ^{h}
	FSSM-2	11.7 ± 0.3 μm ^{op}
	FSSM-3	10.5 ± 0.3 μm ^{qr}
L. Plantarum P7, pH 4.5	FSM	20.6 ± 0.4 μm ^{g}
	FSSM-1	15.5 ± 0.1 μm ^{k}
	FSSM-2	11.4 ± 0.1 μm ^{p}
	FSSM-3	10.0 ± 0.2 μm ^{r}
L. Plantarum T7, pH 4.5	FSM	37.3 ± 0.5 μm ^{a}
	FSSM-1	26.9 ± 0.4 μm ^{c}
	FSSM-2	17.5 ± 0.2 μm ^{i}
	FSSM-3	12.0 ± 0.1 μm ^{o}

L. Plantarum O3, pH 4.0	FSM	20.6 ± 0.5 μm [g]
	FSSM-1	13.9 ± 0.5 μm [m]
	FSSM-2	10.9 ± 0.2 μm [q]
	FSSM-3	10.1 ± 0.1 μm [r]
L. Plantarum P7, pH 4.0	FSM	20.5 ± 0.5 μm [g]
	FSSM-1	13.8 ± 0.3 μm[m]
	FSSM-2	10.6 ± 0.4 μm [qr]
	FSSM-3	10.0 ± 0.3 μm [r]
L. Plantarum T7, pH 4.0	FSM	32.4 ± 0.3 μm [b]
	FSSM-1	22.8 ± 0.4 μm[ef]
	FSSM-2	15.1 ± 0.3 μm [kl]
	FSSM-3	11.6 ± 0.1 μm [p]

[1] Values after ± represent the standard deviations.

[2] [a-r] Values followed by different letters in the same column are significantly different ($P<0.05$).

Table S3. The distrution of major allergenic epitope degradation of FS(S)M gel derived from soybeans at different germination times.

Soy allergen (Accession number)	Region	Allergenic epitope	Samples
Gly m 5.01 (P0DO16)	Region 1	E_{116}–E_{124}	FSSM-1, FSSM-2, and FSSM-3
		H_{117}–E_{142}	
		S_{137}–E_{144}	
	Region 2	N_{201}–R_{215}	FSSM-3
	Region 3	E_{362}–E_{378}	FSSM-3
	Region 4	K_{381}–D_{403}	FSSM-1, FSSM-2, and FSSM-3
		E_{382}–N_{407}	
Gly m 5.02 (P11827)	Region 1	E_{118}–E_{124}	FSSM-2 and FSSM-3
	Region 2	Q_{151}–E_{158}	FSSM-1, FSSM-2, and FSSM-3
	Region 3	E_{173}–D_{188}	FSSM-2 and FSSM-3
	Region 4	H_{213}–R_{218}	FSSM-3
	Region 5	F_{575}–K_{580}	FSSM-3
Gly m 5.03 (P25974)	Region 1	L_{134}–A_{149}	FSSM-1, FSSM-2, and FSSM-3
		D_{139}–K_{154}	
		K_{144}–D_{159}	
		L_{148}–R_{157}	
	Region 2	A_{149}–S_{164}	FSSM-3
		Q_{203}–I_{210}	
		R_{204}–R_{219}	
		V_{209}–R_{224}	
		V_{211}–I_{218}	
		S_{214}–S_{229}	FSSM-2 and FSSM-3
		R_{219}–S_{234}	

		R_{224}–P_{239}	
		S_{234}–Y_{249}	FSSM-1, FSSM-2, and FSSM-3
		P_{239}–G_{254}	
	Region 3	P_{394}–E_{409}	FSSM-2 and FSSM-3
		E_{191}–G_{200}	
	Region 1	F_{192}–E_{198}	FSSM-2 and FSSM-3
		Q_{196}–Q_{203}	
		H_{202}–G_{207}	
		K_{208}–E_{213}	FSSM-3
		G_{217}–L_{229}	
		S_{222}–D_{236}	
Gly m 6.01 (P04776)	Region 2	G_{223}–F_{228}	FSSM-3
		G_{223}–V_{235}	
		F_{228}–A_{232}	
		E_{230}–D_{236}	
	Region 3	N_{242}–E_{246}	FSSM-2 and FSSM-3
		Q_{244}–E_{248}	
	Region 4	Q_{274}–E_{279}	
	Region 5	E_{281}–K_{287}	FSSM-1, FSSM-2, and FSSM-3
		E_{286}–C_{290}	
	Region 1	L_{40}–H_{44}	
	Region 2	V_{46}–G_{51}	FSSM-3
Gly m 6.04 (P02858)	Region 3	G_{152}–A_{167}	
	Region 4	Q_{215}–Q_{220}	FSSM-2 and FSSM-3
	Region 5	Q_{279}–E_{284}	FSSM-1, FSSM-2, and FSSM-3
	Region 1	D_{194}–T_{200}	FSSM-2 and FSSM-3
	Region 2	G_{226}–L_{237}	FSSM-3
Gly m 6.05 (P04347)	Region 3	W_{275}–D_{282}	FSSM-2 and FSSM-3
	Region 4	D_{284}–G_{290}	

	Region 5	T_{292}–P_{297}	
Gly m 8 (P19594)	Region 1	N_{39}–I_{50}	FSSM-1, FSSM-2, and FSSM-3
	Region 2	Q_{95}–T_{99}	
Gly m TI (P01070)	Region 1	R_{55}–G_{60}	FSSM-1, FSSM-2, and FSSM-3
	Region 2	I_{89}–L_{100}	FSSM-1, FSSM-2, and FSSM-3
		A_{93}–F_{102}	
Gly m Bd 30K (P22895)	Region 1	S_{115}–Q_{129}	FSSM-3
	Region 2	H_{202}–V_{209}	FSSM-2 and FSSM-3
		C_{230}–I_{241}	
	Region 3	N_{233}–Y_{244}	FSSM-3
		Q_{236}–L_{247}	
	Region 4	D_{251}–F_{262}	FSSM-3
		T_{254}–A_{265}	
	Region 5	P_{296}–S_{310}	FSSM-2 and FSSM-3

Table S4. The number of epitopes and their distribution of major soybean allergen.

Soybean allergen	Number of epitopes	Amino acid sequence	Sencondary structure
Gly m 1	9	R_5-L_{11}, L_{18}-V_{25}, V_{25}-C_{29}, C_{28}-G_{33}, I_{38}-C_{45}, L_{44}-A_{50}, C_{67}-Y_{71}, R_{69}-A_{75}, N_{74}-R_{79}	α-helix and random coil
Gly m 2	14	R_4-F_9, L_{15}-G_{28}, F_{18}-V_{23}, F_{18}-S_{33}, S_{20}-S_{35}, V_{24}-H_{36}, Q_{25}-H_{39}, S_{33}-H_{39}, S_{33}-A_{49}, H_{39}-H_{46}, R_{44}-C_{52}, L_{50}-E_{55}, E_{55}-G_{60}, S_{66}-F_{70}	α-helix, β-sheet, and random coil
Gly m 3	7	A_{23}-D_{29}, D_{29}-S_{36}, W_{33}-G_{88}, T_{111}-N_{116}, V_{119}-L_{126}, G_{125}-D_{130}, I_{127}-Y_{131}	α-helix, β-sheet, and random coil
Gly m 4	33	E_9-P_{13}, N_{11}-A_{15}, P_{13}-A_{17}, K_{39}-V_{44}, E_{42}-G_{46}, N_{43}-G_{46}, G_{49}-E_{63}, I_{53}-V_{67}, T_{57}-I_{71}, T_{57}-F_{66}, F_{58}-T_{64}, D_{61}-D_{75}, G_{62}-V_{67}, I_{74}-A_{77}, I_{74}-Y_{83}, A_{77}-L_{91}, L_{79}-Y_{83}, S_{82}-V_{86}, S_{84}-G_{87}, V_{85}-A_{90}, K_{97}-G_{111}, V_{105}-K_{119}, N_{109}-K_{115}, Y_{120}-G_{124}, E_{121}-D_{125}, G_{124}-P_{128}, A_{126}-E_{132}, Q_{130}-K_{134}, L_{133}-I_{147}, K_{137}-L_{151}, A_{142}-D_{156}, H_{154}-Y_{157}	α-helix, β-sheet, and random coil
Gly m 7	9	K_{16}-R_{24}, K_{22}-K_{27}, H_{101}-R_{117}, K_{110}-A_{116}, G_{163}-K_{170}, E_{432}-L_{438}, Q_{445}-P_{453}, E_{450}-G_{458}, A_{634}-G_{639}	α-helix and random coil
2S albumin (Gly m 8)	32	L_{12}-S_{20}, S_{20}-H_{26}, Q_{27}-R_{32}, S_{30}-L_{35}, C_{31}-P_{42}, K_{33}-N_{39}, N_{39}-I_{50}, N_{39}-K_{45}, I_{67}-I_{78}, T_{70}-K_{81}, E_{87}-C_{97}, E_{90}-L_{104}, H_{93}-P_{107}, Q_{95}-T_{99}, K_{96}-Q_{110}, T_{99}-A_{113}, T_{99}-L_{104}, S_{102}-A_{113}, S_{102}-K_{116}, K_{105}-D_{119}, I_{108}-S_{122}, K_{108}-I_{117}, C_{111}-L_{125}, C_{111}-K_{116}, N_{120}-K_{128}, E_{127}-I_{138}, K_{132}-F_{146}, K_{135}-M_{149}, I_{138}-C_{152}, A_{141}-S_{155}, M_{143}-P_{148}, I_{150}-S_{155}	α-helix and random coil
Kunitz trypsin	6	R_{55}-G_{60}, I_{89}-L_{100}, A_{93}-F_{102}, C_{111}-T_{116}, T_{116}-V_{121},	β-sheet and random coil

inhibitor (Gly m TI)		S_{205}-R_{215}	
Lectin (Gly m Agglutinin)	4	Q_{134}-Y_{139}, F_{160}-D_{165}, F_{260}-H_{266}, H_{266}-D_{272}	β-sheet and random coil
7S α subunit (Gly m 5.01)	31	F_{15}-I_{25}, S_{48}-A_{56}, A_{56}-L_{61}, E_{64}-G_{71}, E_{67}-E_{95}, P_{76}-E_{86}, R_{102}-R_{127}, E_{116}-E_{124}, H_{117}-E_{142}, S_{137}-E_{144}, Q_{152}-R_{177}, D_{172}-L_{197}, E_{174}-E_{180}, S_{185}-G_{199}, N_{192}-F_{220}, K_{193}-F_{207}, N_{201}-R_{215}, N_{209}-R_{223}, L_{217}-R_{231}, Q_{226}-T_{244}, L_{227}-D_{252}, T_{263}-T_{291}, Y_{293}-S_{321}, F_{322}-E_{343}, E_{362}-E_{378}, K_{381}-D_{403}, E_{382}-N_{407}, S_{401}-N_{430}, D_{412}-D_{437}, N_{523}-Q_{543}, Q_{573}-R_{602}	α-helix, β-sheet, and random coil
7S α' subunit (Gly m 5.02)	44	Y_{27}-Q_{31}, Q_{31}-K_{37}, R_{40}-E_{45}, K_{62}-Q_{73}, V_{63}-I_{74}, R_{76}-K_{92}, Q_{88}-P_{102}, E_{94}-R_{101}, D_{95}-R_{109}, P_{106}-Q_{110}, Q_{110}-E_{115}, E_{118}-E_{124}, K_{128}-G_{133}, S_{137}-E_{145}, E_{145}-H_{150}, Q_{151}-E_{158}, H_{160}-H_{169}, E_{173}-E_{177}, E_{177}-K_{188}, E_{190}-P_{203}, H_{213}-R_{218}, R_{218}-F_{223}, N_{225}-R_{231}, N_{237}-Q_{244}, S_{240}-R_{247}, L_{263}-D_{268}, S_{292}-Q_{296}, L_{301}-G_{306}, M_{322}-R_{334}, F_{339}-S_{354}, G_{375}-Q_{380}, E_{384}-E_{394}, K_{398}-L_{403}, T_{443}-D_{451}, D_{451}-K_{474}, V_{454}-D_{460}, E_{463}-F_{467}, I_{481}-N_{487}, I_{493}-Q_{498}, N_{533}-D_{537}, D_{581}-K_{587}, F_{575}-K_{580}, K_{587}-S_{592}, A_{597}-Q_{601}	α-helix, β-sheet, and random coil
7S β subunit (Gly m 5.03)	75	F_{16}-S_{23}, L_{24}-S_{39}, E_{28}-R_{37}, D_{29}-T_{44}, Y_{35}-N_{48}, S_{39}-R_{54}, T_{44}-F_{59}, Q_{49}-P_{64}, Q_{49}-Q_{57}, R_{54}-L_{69}, L_{55}-F_{59}, F_{59}-I_{74}, S_{63}-N_{68}, S_{63}-R_{70}, E_{67}-D_{71}, Y_{72}-K_{80}, I_{74}-H_{89}, I_{84}-L_{99}, H_{89}-I_{104}, F_{97}-L_{105}, L_{99}-D_{114}, A_{103}-R_{113}, I_{104}-H_{119}, S_{115}-P_{120}, H_{119}-L_{134}, D_{122}-P_{127}, I_{126}-K_{144}, G_{129}-K_{144}, Y_{133}-N_{142}, L_{134}-A_{149}, D_{139}-K_{154}, K_{144}-D_{159}, L_{148}-R_{157}, A_{149}-S_{164}, K_{154}-D_{159}, Y_{158}-R_{194}, Q_{174}-F_{189}, L_{181}-R_{194}, S_{184}-E_{199}, N_{193}-G_{198}, V_{195}-R_{204}, V_{195}-	α-helix, β-sheet, and random coil

		K_{215}, L_{196}-E_{202}, Q_{203}-I_{210}, R_{204}-R_{219}, V_{209}-R_{224}, V_{211}-I_{218}, S_{214}-S_{229}, R_{219}-S_{234}, R_{224}-P_{239}, S_{234}-Y_{249}, P_{239}-G_{254}, S_{244}-I_{259}, Y_{249}-N_{264}, G_{254}-D_{269}, I_{259}-L_{274}, N_{264}-I_{279}, D_{269}-L_{284}, D_{269}-K_{292}, I_{272}-N_{280}, L_{274}-F_{289}, I_{279}-I_{294}, F_{289}-A_{304}, V_{295}-E_{301}, A_{344}-L_{359}, A_{345}-V_{350}, S_{354}-Q_{369}, A_{374}-Q_{389}, N_{379}-P_{394}, Q_{389}-L_{404}, P_{394}-E_{409}, D_{399}-D_{414}, L_{404}-Q_{419}, Q_{419}-I_{434}, S_{424}-Y_{439}	
P34 (Glym Bd 34K)	21	T_{35}-S_{49}, L_{65}-N_{79}, I_{75}-R_{89}, P_{85}-T_{99}, K_{105}-K_{119}, S_{115}-Q_{129}, P_{135}-Q_{149}, E_{192}-G_{200}, E_{193}-E_{207}, N_{199}-W_{208}, H_{202}-V_{209}, K_{226}-T_{240}, C_{230}-I_{241}, N_{233}-Y_{244}, Q_{236}-L_{247}, D_{242}-S_{253}, D_{251}-F_{262}, T_{254}-A_{265}, P_{296}-S_{310}, E_{325}-T_{339}, A_{366}-L_{379}	α-helix, β-sheet, and random coil
P28 (Glym Bd 28K)	3	G_{31}-S_{45}, L_{59}-I_{73}, E_{157}-H_{171}	α-helix, β-sheet, and random coil
11S glycinin G1 (Glym 6.01)	34	S_{14}-F_{20}, Q_{25}-Q_{34}, P_{41}-E_{46}, R_{44}-G_{49}, N_{86}-E_{90}, I_{103}-E_{113}, P_{105}-S_{123}, E_{113}-G_{121}, G_{121}-D_{128}, P_{126}-Q_{131}, I_{142}-G_{147}, E_{191}-G_{200}, F_{192}-E_{198}, Q_{196}-Q_{203}, H_{202}-G_{207}, K_{208}-E_{213}, G_{217}-L_{229}, S_{222}-D_{236}, G_{223}-F_{228}, G_{223}-V_{235}, F_{228}-A_{232}, E_{230}-D_{236}, N_{242}-E_{246}, Q_{244}-E_{248}, G_{253}-I_{265}, L_{262}-P_{267}, P_{268}-Q_{274}, Q_{274}-E_{279}, E_{281}-K_{287}, E_{286}-C_{290}, K_{293}-C_{297}, E_{314}-T_{318}, F_{370}-L_{376}, F_{482}-K_{491}	α-helix, β-sheet, and random coil
11S glycinin G2 (Glym 6.02)	53	M_1-G_{15}, K_3-F_{17}, C_9-A_{23}, L_{12}-A_{18}, L_{19}-Q_{31}, N_{40}-G_{46}, S_{44}-I_{49}, K_{57}-A_{65}, K_{57}-L_{71}, A_{65}-P_{79}, R_{73}-E_{87}, Y_{81}-G_{95}, N_{83}-F_{97}, Y_{89}-G_{103}, Q_{91}-P_{105}, F_{97}-P_{111}, I_{100}-Y_{108}, E_{110}-Q_{116}, Q_{112}-G_{118}, G_{118}-Q_{128}, Q_{121}-K_{129}, Q_{128}-F_{133}, V_{130}-V_{141}, G_{136}-E_{153}, P_{142}-W_{147}, E_{169}-Q_{174}, N_{170}-N_{184}, R_{178}-Y_{192}, E_{186}-L_{190}, E_{186}-S_{200}, E_{188}-Q_{197}, F_{189}-Q_{195}, L_{190}-K_{204}, Q_{194}-Q_{208}, Q_{195}-Q_{201}, G_{199}-G_{205}, G_{214}-F_{225}, S_{219}-N_{233}, S_{249}-A_{263}, K_{256}-V_{261}, G_{257}-Q_{271}, Q_{283}-	α-helix, β-sheet, and random coil

		C_{291}, G_{329}-W_{343}, L_{337}-Y_{351}, L_{345}-M_{359}, S_{353}-N_{367}, M_{359}-Y_{373}, V_{361}-L_{375}, N_{367}-V_{381}, N_{369}-V_{383}, V_{449}-Q_{463}, Q_{451}-K_{465}, K_{457}-S_{471}	
11S glycinin G3 (Gly m 6.03)	22	C_{17}-F_{22}, F_{20}-Q_{27}, R_{81}-T_{85}, E_{90}-G_{96}, Y_{92}-I_{99}, E_{113}-G_{118}, E_{113}-H_{127}, Q_{115}-R_{122}, D_{125}-F_{133}, I_{130}-E_{135}, I_{139}-F_{145}, F_{168}-Q_{174}, P_{176}-Y_{180}, R_{177}-L_{190}, G_{183}-Q_{187}, F_{189}-Q_{195}, G_{259}-P_{266}, P_{266}-Q_{272}, R_{274}-P_{281}, E_{278}-E_{285}, Q_{291}-N_{296}, T_{314}-F_{320}	β-sheet and random coil
11S glycinin G4 (Gly m 6.04)	23	E_{31}-N_{36}, L_{40}-H_{44}, V_{46}-G_{51}, N_{57}-K_{72}, S_{58}-L_{63}, G_{67}-K_{72}, N_{78}-P_{83}, K_{128}-D_{133}, N_{142}-V_{148}, G_{152}-A_{167}, Q_{215}-Q_{220}, I_{262}-Q_{277}, G_{268}-P_{274}, Q_{279}-E_{284}, D_{292}-K_{307}, G_{336}-E_{341}, P_{364}-R_{370}, A_{394}-A_{399}, A_{394}-I_{409}, A_{399}-S_{414}, S_{414}-Y_{429}, Q_{421}-Y_{428}, A_{508}-Y_{512}	α-helix, β-sheet, and random coil
11S glycinin G5 (Gly m 6.05)	33	N_{77}-H_{82}, N_{79}-S_{85}, L_{83}-Y_{89}, Y_{86}-Q_{91}, A_{105}-P_{110}, G_{108}-E_{114}, H_{140}-G_{144}, L_{147}-G_{152}, E_{163}-I_{168}, D_{194}-T_{200}, K_{214}-E_{222}, G_{226}-L_{237}, K_{250}-D_{256}, S_{272}-Q_{276}, W_{275}-D_{282}, D_{284}-G_{290}, T_{292}-P_{297}, R_{299}-H_{305}, E_{311}-P_{320}, E_{313}-P_{324}, Q_{317}-H_{322}, P_{320}-Q_{325}, Q_{325}-E_{334}, Q_{332}-G_{337}, R_{336}-Q_{341}, G_{339}-N_{344}, A_{433}-E_{438}, T_{469}-A_{473}, V_{474}-K_{479}, L_{490}-N_{495}, N_{492}-G_{497}, N_{509}-N_{515}, G_{510}-N_{514}	α-helix, β-sheet, and random coil