protein	Alternative names	Family/ Similarities	Protein data				Allergic individuals				evidence for clinical reactivity to soy corresponding with reaction to the specific allergen	contra evidence	References*	Nr. of groups referenced	Comments
			Sequence availability	PFAM code	Uniprot (examples)	NCBI (examples)	individuals tested and positives (examples)	allergenic activity described by	geographic regions	patients' group					
Gly m 1	hydrophobic seed protein	Lipid transfer protein	yes	PF14547	P24337	123506	[6]20 patients: 95% positive; [3]18 patients:83% positive	IgE binding, ELISA	Spain	adults		[8,10]no sensitisation to Gly m 1 in occupational asthma of soy allergic individuals (bakers/workers)	1-10	mainly 2 groups working on this allergen, all sera are from 2 asthma outbreaks (Barcelona and Cartagena)	[1]molds as possible secondary etiologic agents; [2]storage of soy enhances IgE binding; [3]is it Gly m 1?
Gly m 2	Defensin	Storage protein	20AA N-terminal sequence			A57106	[3]18 patients:83% positive	IgE binding, ELISA	Spain	adults		[8]no sensitisation to Gly m 2 in occupational asthma of soy allergic individuals (workers)	2,3,8,11,12	mainly 1 group working on this allergen, sera are from an asthma outbreak (Barcelona)	[12]an undescribed 8 kDa protein is recognized by IgE (Gly m 2?)
Gly m 3	Soy profilin	Profilin	yes	PF00235	A7XZJ7	3021375	[12]22 patients: 25% positive; [13]13 patients: 69% positive	IgE binding	Germany, The Netherlands, Switzerland	adults (children)	[12]DBPCFC to soy		12-14	3	profilin cross-reactivity
Gly m 4	SAM22, PR-10	Bet v 1 family	yes	PF00407	C6T1G1	18744	[15]21/30 soy allergic patients; [18]8 birch allergic children reacting to Gly m 4; [21]22 birch allergic patients: 96% positive	IgE binding (ELISA, CAP, microarray) [19]basophil histamine release	Germany, Austria, Switzerland, Sweden, Italy, Denmark	adults, children	[12,15,21]DBPCFC; [18]open challenge; [12,15,17,18]SPT, [12,19,20]oral allergy syndrome; [17,19,20]strong link to severe systemic reactions to soy products		12, 15-21	>3	cross-reactivity with Bet v 1, 66-69% sequence identity with Bet v 1, Mal d 1, Pru av 1, strong clinical reactivity shown in birch and soy allergics (children and adults)
Gly m 5	beta-conglycinin, 7S globulin fraction, Gly m Bd 60 K	Cupin, vicilin-like proteins	yes, 3 subunits	PF00190	P13916.2 (alpha) Q0MUU5 (alpha prime) P25974.1 (beta)	18536 (alpha) 169929 (alpha prime) 121282 (beta)	[26]13/30 patients (43%), 5/5 children (100%)	IgE binding, [32]dose-dependent histamine release in basophil testing	Switzerland, Spain, The Netherlands, US, China, Japan, Argentina	adults, children	[24,26]DBPCFC, [26]history of anaphylaxis to soy, [26,27]strong link to allergic symptoms, [24]AD patients, [22]exercise induced anaphylaxis, [8,23]possible also respiratory sensitisation		8, 22-32	>3	[8,23]also respiratory allergy; [27]IgE levels significantly higher in symptomatic children compared to unsymptomatic; [31]peanut allergic patient's IgE reacts with Gly m 5
Gly m 6	glycinin, 11S globulin fraction	Cupin	yes, several subunits	PF00190	P04776.2, P04405.2, P11828.1, P02858.1, P04347, Q43452	169973, 218265, 18639, 732706, 10566449, 75221455	[26]11/30 patients (36%), 3/5 children (60%);	IgE binding, RBL assay (but no patient's IgE used)	Switzerland, Spain, The Netherlands, US, China, Japan	adults, children	[26]DBPCFC, [26]history of anaphylaxis to soy, [26,27]strong link to allergic symptoms, [8,23]possible also respiratory sensitisation		8, 23, 26, 27, 33-39	>3	[8,23]also respiratory allergy; [27]IgE levels significantly higher in symptomatic children compared to unsymptomatic ; [37]cross-ractivity with cow milk casein, [31]peanut allergic patient's IgE reacts with Gly m 6
Gly m 7	seed biotinylated protein		yes		C6K8D1	ACS49840	16(17)/24 tested patients positive	IgE binding, unpublished	US				40	1	Data from an unpublished dissertation, included in IUIS, not included OECD; IUIS scientific committee: no publication necessary if the committee receives convincing information for including an allergen into the database.
Gly m 8	2S albumin	prolamin, plant LTP	yes	PF00234	P19594	AAB71140	[31]4/8 anaphylactic patients; [41]17/19 symptomatic children	IgE binding (ELISA, microarray)	US, Switzerland, Germany, The Netherlands, Japan	adults, children	[42]IgE to 2S A with strong link to severe reactions	[41]23 european soy allergic patients show no reactivity with Gly m 8	9, 31, 41-43	>3	[41]important IgE binding protein in Japanese children; [42]significant correlation of 2S IgE with SPT in Europeans
Gly m BD 28K	soy cupin, unknown Asn-linked glycoprotein	vicilin-like glycoprotein, Cupin	yes	PF00190	Q9AVK8	410067729	[45]10/10 patients (100%); [48]5/8 patients (62.5%)	IgE binding	Japan, US	adults, children			44-48	2	IgE binding seems to be dependent on glycan residues
Gly m BD 30K	soybean vacuolar protein, P34	thiol proteinases of papain family, Peptidase C1	yes	PF08246, PF00112	P22895.1	129353	[50]serum pool 4 patients; [53]9/31; [54]69 patients, 65% bind to 30 kD protein in 7S fraction,	IgE binding	Japan, US, France	adults, children	[50,51]DBPCFC to soy, [50,51]positive SPT, [53]significant correlation between soy IgE and IgE to P34		49-56	>3	evidence for clinical relevance.
Soybean lectin	Soy agglutinin	Agglutinin, Lectin_legB	yes	PF00139	P05046.1	126151	[43]5/16 positive; [57]commercially obtained SBA: 3/14 soybean sensitized bakers; [58]**peanut** allergic patients weakly cross-react	IgE binding	France, Germany, UK, Switzerland, Australia, USA	adults, children	[59]SPT and oral provocation to peanut	[60]investigation of different lectins, soy lectin not reactive	43, 57-61	1	[58,59]peanut lectin cross-reactivity; [43,57]soy patient's IgE binding, other publications do not use soy allergic patients. Measurement by ELISA discouraged due to possible unspecific lectin-antibody interactions.
Lipoxygenase	Lipoxidase		no				[57]6/14 soybean sensitized bakers	IgE binding	Germany	adults			57	1	Purity of commercially obtained lipoxgenase is challenged by Ladics et al.
Kunitz trypsin inhibitor	Soybean trypsin inhibitor, Gly TI	trypsin inhibitors	yes	PF00197	P01070	18770, 510515	[9]1/6 patients; [57]12/14 patients; [62]1/5 patients; [65]6/45 patients	IgE binding, inhalation testing (uncontrolled)	USA, Canada, Germany, Spain	adults, children	[62]DBPCFC and SPT to soybean; [63]possible anaphylaxis linked to KTI; [64]symptoms after inhalation (uncontrolled)		9, 57, 62-65	>3	[9,62]small test size; [10]possible clinical reactivity as inhalation allergen; food or respiratory allergen
Gly m 39KD	P39, unknown 39K		12AA N-terminal sequence				[9]2/6 patients positive	IgE binding	USA, Canada	adults, children			9, 66	2	[9]few patients; 5 sera criterium not fullfilled*
Gly m 50KD	unknown 50K		17AA non terminal residue		P82947		15/29 patients positive	IgE binding	Argentina	adults, children	[67]SPT to soybean hulls		67	1	unknown protein in soybean hulls, respiratory allergy
P22-25			no				?	IgE binding (humans??)					68	1	serum from soy allergic calfs bind an unknown protein of 22-25kDa; 5 sera criterium??*
Gly m CPI	Cystatin, cystein protease inhibitor	squash aspartic acid proteinase inhibitor	yes	PF16845	O04720	75219003	[61]1/6 patients positive	IgE binding	USA				61	1	identification of a new IgE binding protein, 5 sera criterium not fullfilled*
Gly m EAP	Embryonic abundant protein	Late embryogenesis abundant protein	yes	PF02987	Q39871	75102152	[61]3/6 patients positive	IgE binding	USA				61	1	identification of a new IgE binding protein; 5 sera criterium not fullfilled*
Unknown possible allergen		Protease inhibitor/seed storage/LTP family	yes	PF00234	I1JL08		none	homology prediction					69	1	identification of LTP with probable allergenicity by homology comparison, 5 sera criterium not fullfilled*

Table C1: Information on (potential) soybean allergens 2016

* 5 sera criterium: according to IUIS, 5 sera have to be positive in studies with few patients.

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