nutrients

Supplemental data

Effect of the strawberry genotype, cultivation and processing on the Fra a 1 allergen content

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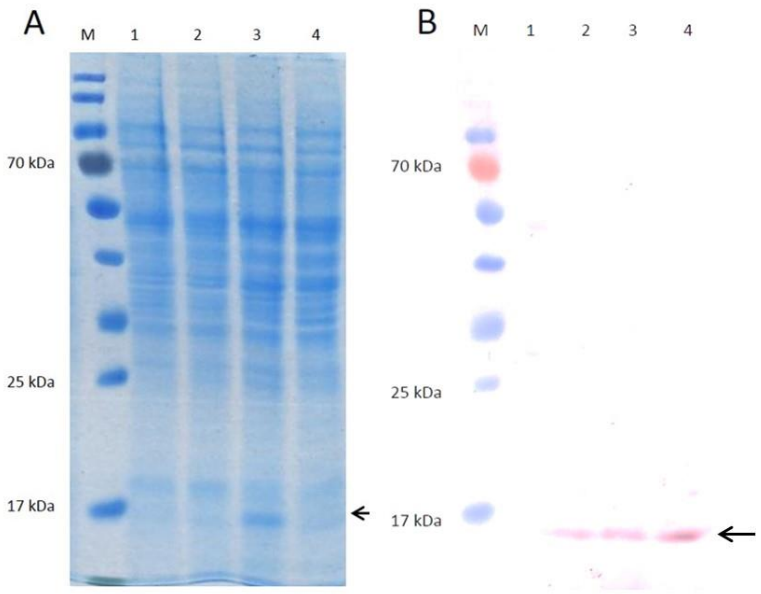

Figure S1. Protein pattern of strawberry extracts.

Native strawberry protein extracts of commercially available cultivars analyzed by (A) SDS-PAGE and (B) Western-Blot analysis. 1 – Fruits (unknown cultivar) from grocery store strawberry, 2 – Elsanta, 3 – Florika, 4 – Magnum. SDS-PAGE was performed under reducing conditions. For protein staining coomassie Brilliant Blue G250 was used. Western blot analysis was performed using a specific polyclonal Fra a 1.02-antibody. The 18 kDa band, corresponding to the native Fra a 1, is marked with an arrow. M: PageRuler Prestained Protein Ladder

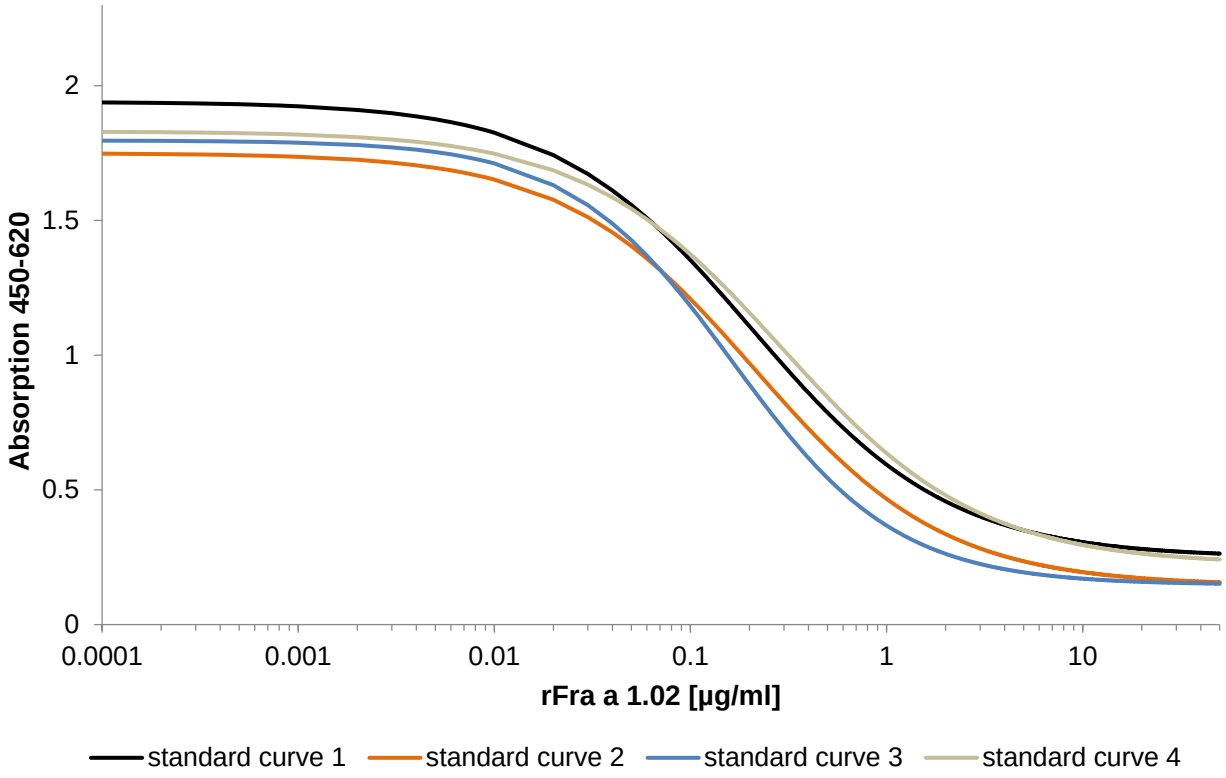

Figure S2. Standard curve of indirect competitive ELISA.

Competitive ELISA was performed using serial dilutions of rFra a 1.02 as free allergen. From the standard curves obtained at different days the concentration of Fra a 1 in µg/ml in various strawberry samples was calculated using the 4-paramter plot.

Table S1. Strawberry cultivars

Fra a 1 content (mean values) in µg/g FW, total soluble protein in µg/g FW and percentage of Fra a 1/total soluble protein of different strawberries. Plants were grown at Hansabred (Dresden, Munich).

variety	cultivar	color	Fra a 1 [µg/g FW]	total soluble protein [mg/g FW]	% Fra a 1/total soluble protein
F. × *ananassa*	Elianny	red	0.881 ± 0.91	1.014 ± 0.058	0.087
F. × *ananassa*	Elsanta	red	0.931 ± 0.27	1.002 ± 0.039	0.093
F. × *ananassa*	Faith	red	0.945 ± 0.31	0.888 ± 0.050	0.106
F. × *ananassa*	Königin Luise	red	1.025 ± 0.24	1.290 ± 0.104	0.079
F. × *ananassa*	Korona	red	1.185 ± 0.42	1.085 ± 0.064	0.109
F. × *ananassa*	Magnum	red	1.231 ± 0.28	1.168 ± 0.112	0.105
F. × *ananassa*	Mieze Schindler	red	0.985 ± 0.26	1.250 ± 0.065	0.079
F. × *ananassa*	Oberschlesien	red	0.957 ± 0.26	1.023 ± 0.077	0.094
F. × *ananassa*	Renaissance	red	0.968 ± 0.23	1.102 ± 0.043	0.088
F. × *ananassa*	Snow White	white	2.343 ± 0.75	0.981 ± 0.075	0.239
F. chiloensis	Lucida Perfecta	white	1.938 ± 0.66	1.359 ± 0.136	0.143
F. moschata	Profumata di Tortona	red	2.378 ± 1.02	1.441 ± 0.119	0.165
F. moschata	Wuerzburg	red	2.696 ± 0.79	1.590 ± 0.089	0.169
F. nilgerensis	Leigong	white	0.686 ± 0.13	1.722 ± 0.127	0.039
F. nilgerensis	Yunnan	white	1.339 ± 0.35	1.502 ± 0.163	0.089
F. vesca	Grotta del Vento	red	0.818 ± 0.24	1.794 ± 0.138	0.046
F. vesca	Moritzburg	yellow	0.937 ± 0.27	1.858 ± 0.104	0.050
F. vesca	Reine des Vallées	red	1.111 ± 0.43	2.044 ± 0.115	0.054
F. vesca	Yellow Wonder	yellow	1.331 ± 0.43	1.920 ± 0.062	0.069
F. × *vesana*	Florika	red	3.817 ± 1.28	1.385 ± 0.155	0.276

Table S2. Growing conditions for conventional and organic strawberry cv. Asia cultivated in Italy, Forlì-Cesena district.

	conventional	**organic**
Name of Farm	Integrated "Burioli Claudio"	Organic "Guardigni Paola"
Location	S. Martino in fiume (Cesena)	S. Martino in fiume (Cesena)
Dimension	8 hectares	10 hectares
Age of the farm	-	10 years
Type of cultivation	no-forced tunnel	semi-forced tunnel
Plant transplant	July	July
Closing of tunnel	May	March
Planting spacing	0.35 per 0.30 m	0.35 per 0.30 m
Total production	900 g/plant	850 g/plant
Marketable production	750 g/plant	700 g/plant
Fertilization	8-24-16 NPK, three times, 15 g/plant Sequestrene, 0.05 g/plant	Autumn cereal grass (*Triticum* spp.) green manure at the end of April solid organic manure in June (before transplant) fertirrigation with products approved for Organic
Treatments of pesticides	commonly used anti-fungal and insecticides	Copper, Neem oil, Phytoseiids (against Spider mite)
Harvest dates	20 May 2015 24 May 2016 11 May 2017	20 May 2015 24 May 2016 11 May 2017
Product destination	cooperative and direct sale	direct sale

Table S3. Temperature and relative humidity at the growing location Forlì-Cesena in Italy for April and May in the years 2015 to 2017; National Agrometereological DataBase of Italy SIAN (National Agricultural Information System)

	Year	**Month**			
		April	**Historical Data (1960-1990)**	**May**	**Historical Data (1960-1990)**
T_{min} [°C]	2015	7.5		13.2	
	2016	9.0	8.2	11.6	12.2
	2017	7.6		12.1	
T_{max} [°C]	2015	20.7		26.5	
	2016	22.0	18.0	25.6	24.1
	2017	21.0		24.8	
T_{mean} [°C]	2015	14.1		19.8	
	2016	15.5	13.1	18.6	18.2
	2017	14.3		18.5	
relative humidity [%]	2015	85		69	
	2016	82		82	
	2017	81		71	